STEREO CASSETTE RECEIVER

KRC-951RDS

SERVICE MANUAL

KENWOOD

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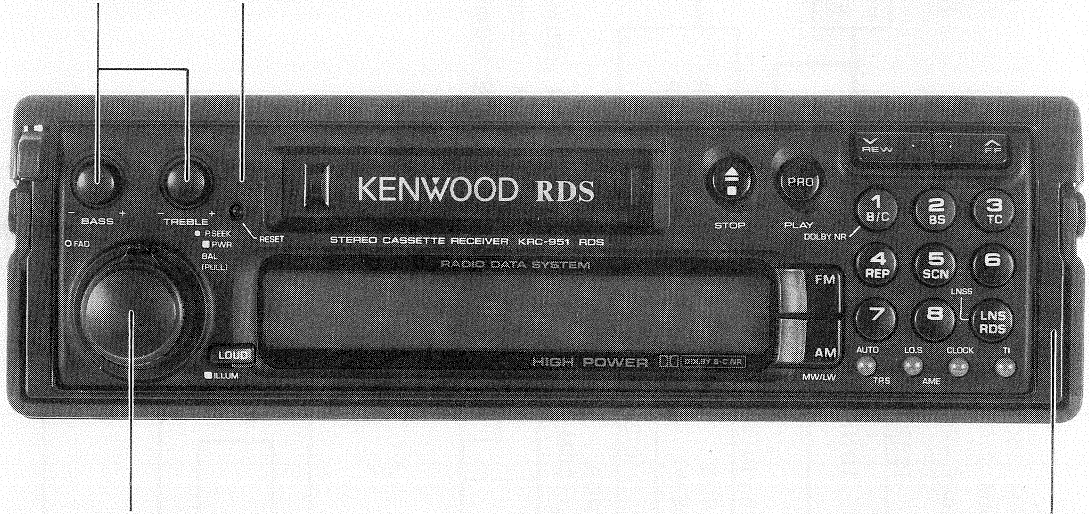
B51-6145-00(B)1607

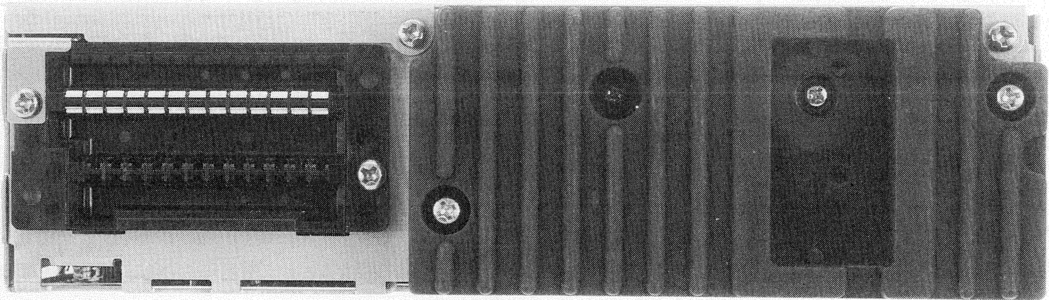
Knob (TONE)
(K23-1004-04)

Panel ass'y
(A20-7553-03)


KENWOOD RDS
BASS
TREBLE
P.SEEK
PWR
BAL (PULL)
FAD
RESET
STEREO CASSETTE RECEIVER KRC-951 RDS
RADIO DATA SYSTEM
LOUD
ILLUM
HIGH POWER
DOLBY B-C NR
STOP
PLAY
PRO
DOLBY NR
REW
FF
1 B/C
2 BS
3 TC
4 REP
5 SCN
6
7
8
LNSS
LNS RDS
FM
AM
MW/LW
AUTO
LO.S
CLOCK
TI
TPS
AME

Knob (VOL)
(K29-5538-03)

Escutchon ass'y
(B07-2014-12)



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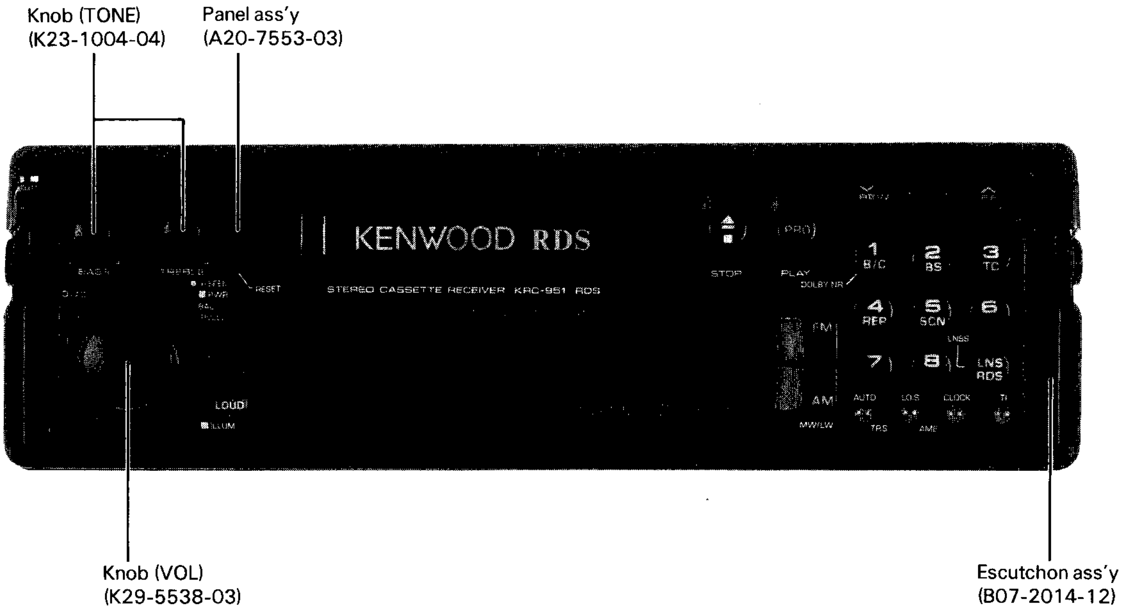
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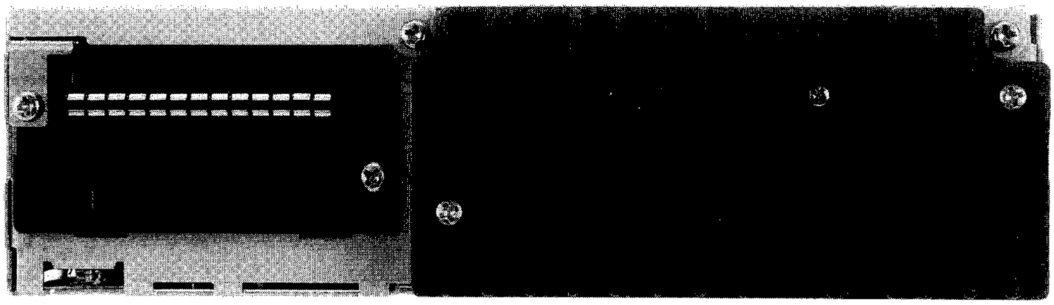
Panel ass'y
(A20-7553-03)
Knob (VOL)
(K29-5538-03)
Escutchon ass'y
(B07-2014-12)



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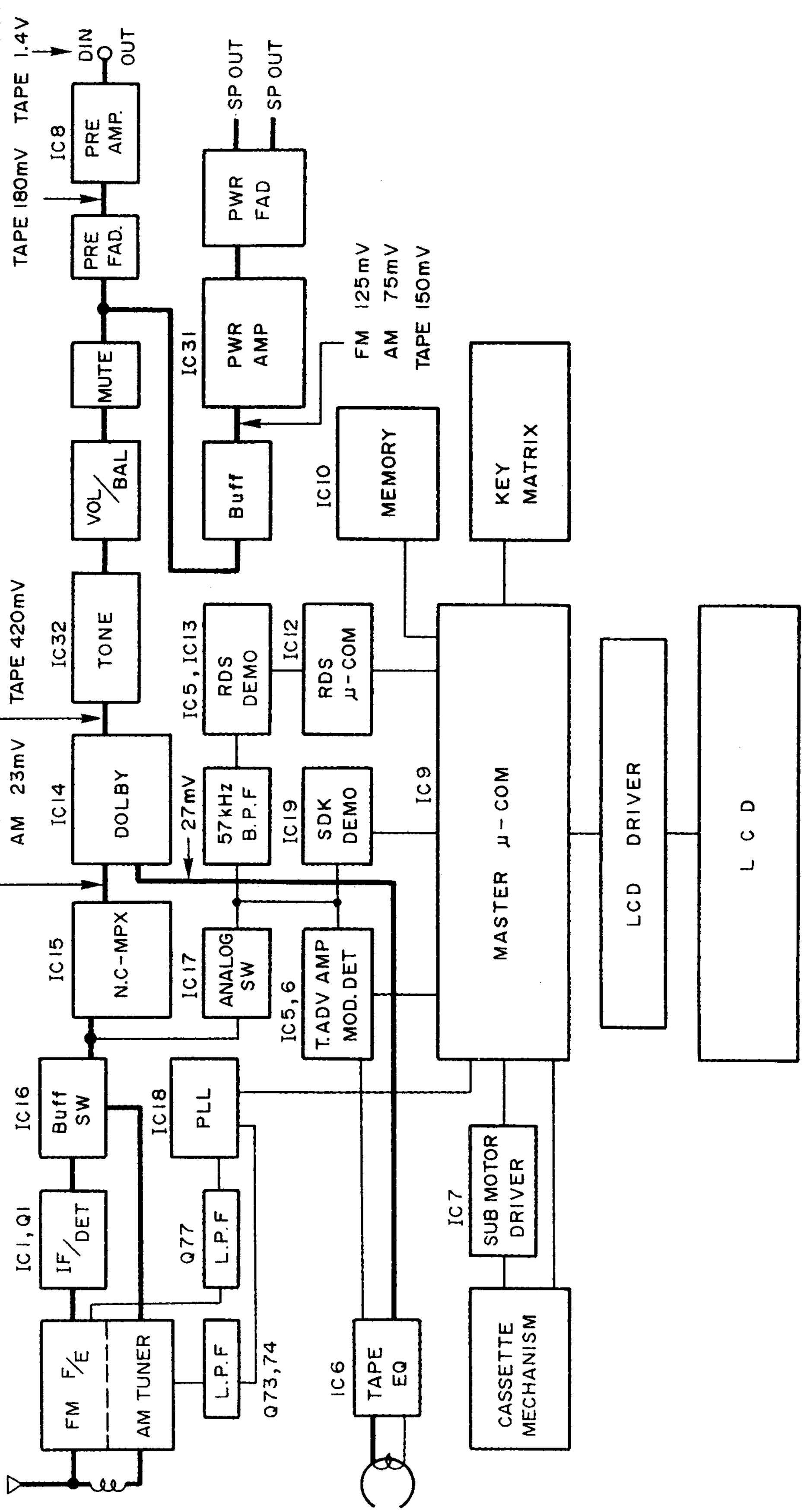
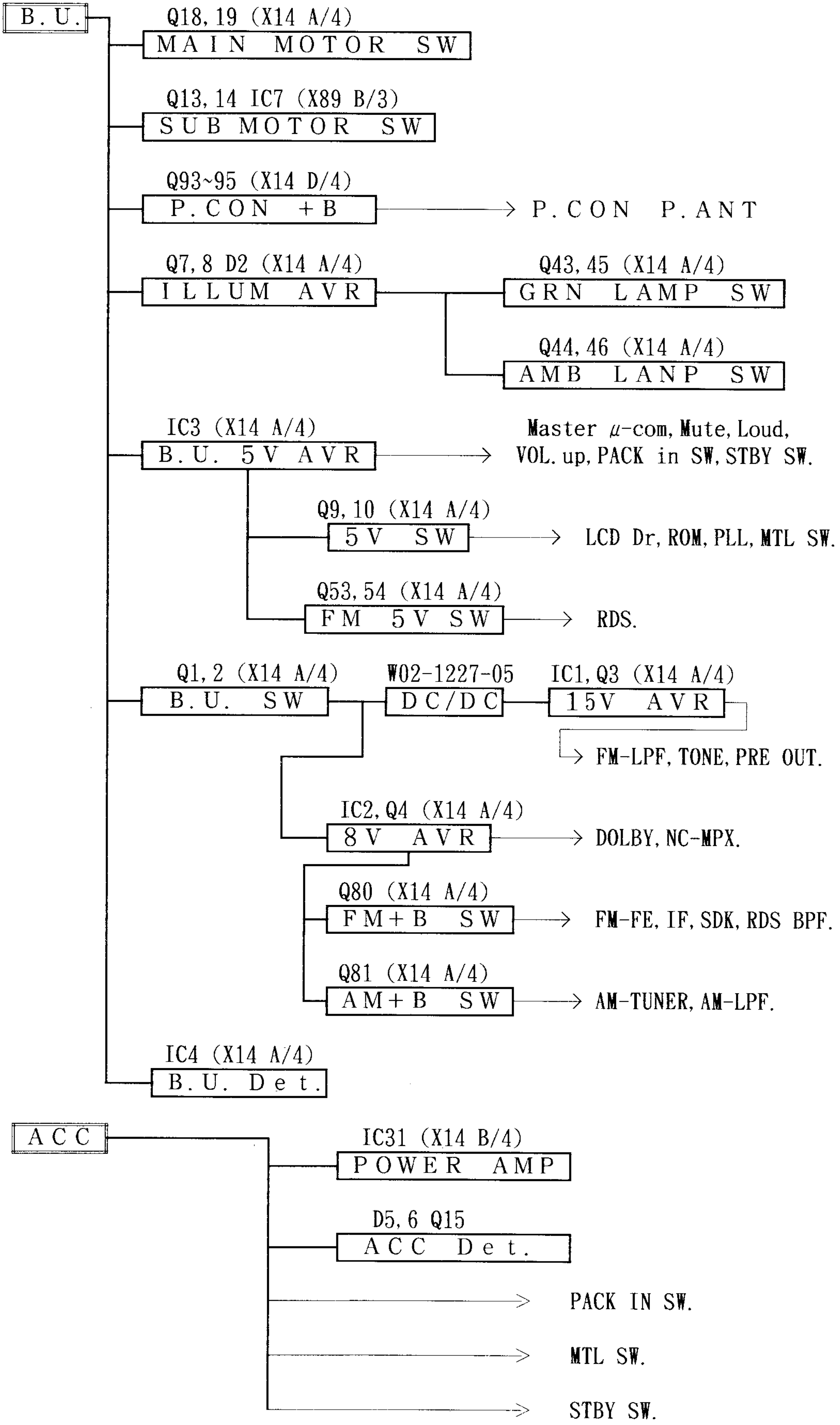
KRC-951RDS

BLOCK DIAGRAM


FM 1.1V
AM 670mV
TAPE 1.4V
DIN
OUT
IC8
PRE AMP.
FM 150mV
AM 89mV
TAPE 180mV
PRE FAD.
SP OUT
SP OUT
PWR FAD
IC31
PWR AMP
FM 125mV
AM 75mV
TAPE 150mV
MUTE
VOL/BAL
Buff
IC10
MEMORY
KEY MATRIX
FM 350mV
AM 210mV
TAPE 420mV
IC32
TONE
IC5, IC13
RDS DEMO
IC12
RDS μ-COM
FM 38mV
AM 23mV
IC14
DOLBY
27mV
57kHz B.P.F
IC19
SDK DEMO
IC9
MASTER μ-COM
LCD DRIVER
LCD
IC15
N.C-MPX
IC17
ANALOG SW
IC5, 6
T.ADV AMP MOD.DET
IC16
Buff SW
IC18
PLL
IC7
SUB MOTOR DRIVER
IC1, Q1
IF/DET
Q77
L.P.F
FM F/E
AM TUNER
L.P.F
Q73, 74
IC6
TAPE EQ
CASSETTE MECHANISM

BLOCK DIAGRAM

POWER SUPPLY


B.U.
Q18,19 (X14 A/4)
MAIN MOTOR SW
Q13,14 IC7 (X89 B/3)
SUB MOTOR SW
Q93~95 (X14 D/4)
P.CON +B
P.CON P.ANT
Q7,8 D2 (X14 A/4)
ILLUM AVR
Q43,45 (X14 A/4)
GRN LAMP SW
Q44,46 (X14 A/4)
AMB LANP SW
IC3 (X14 A/4)
B.U. 5V AVR
Master μ-com, Mute, Loud, VOL. up, PACK in SW, STBY SW.
Q9,10 (X14 A/4)
5V SW
LCD Dr, ROM, PLL, MTL SW.
Q53,54 (X14 A/4)
FM 5V SW
RDS.
Q1,2 (X14 A/4)
B.U. SW
W02-1227-05
DC/DC
IC1,Q3 (X14 A/4)
15V AVR
FM-LPF, TONE, PRE OUT.
IC2,Q4 (X14 A/4)
8V AVR
DOLBY, NC-MPX.
Q80 (X14 A/4)
FM+B SW
FM-FE, IF, SDK, RDS BPF.
Q81 (X14 A/4)
AM+B SW
AM-TUNER, AM-LPF.
IC4 (X14 A/4)
B.U. Det.
ACC
IC31 (X14 B/4)
POWER AMP
D5,6 Q15
ACC Det.
PACK IN SW.
MTL SW.
STBY SW.

CIRCUIT DESCRIPTION

Description of component

Synthesizer Unit (X14-2872-70)

<table>
<tr><th>Ref. No.</th><th>Use, Function</th><th>Operation, Condition and Compatibility</th></tr>
<tr><td>Q1, 2</td><td>Power Switch</td><td>Power switch which supplied the power to the audio circuit AVR from the B/U power supply when the Power ON +B port of IC9 goes high and Q2 and Q1 are turned ON sequentially.</td></tr>
<tr><td>Q3, IC1</td><td>15 V AVR</td><td>Q3 is the current amplifying transistor for regulated power supply, while IC1 is its driver. By the combination of Q3 and IC1, +15 V AVR is consisted.</td></tr>
<tr><td>Q4, IC2</td><td>+7.5 V AVR</td><td>Q4 is the current amplifying transistor for regulated power supply, while IC2 is its driver. By the combination of Q4 and IC2, +7.5 V AVR is consisted.</td></tr>
<tr><td>IC4</td><td>B/U Voltage reduction detector</td><td>Detects the voltage reduction of B/U. When the voltage of B/U is below about 8.0 V, IC4 goes low to turn Q15 OFF so that high level signal is applied to IC9 pin 53.</td></tr>
<tr><td>IC3</td><td>B/U 5 V AVR</td><td>3-pin regulator for 5 V</td></tr>
<tr><td>Q7, 8, D2</td><td>10 V AVR for illumination</td><td>Consisting the series-type 10 V AVR by Q7, Q8 and D2.</td></tr>
<tr><td>Q6, 5, D1</td><td>10 V AVR Switch for illumination</td><td>Supplies the power to 10 V AVR for illumination when SW +5 V or ILLMI input is at high level.</td></tr>
<tr><td>Q10, Q9</td><td>Switch for SW +5 V</td><td>Swiches the output from B/U 5 V AVR to SW +5 V by Power ON +B signal of IC9.</td></tr>
<tr><td>Q11</td><td>Scanning amp gain Switch</td><td>Turns OFF while the tape is fast-forwarded, rewind or when TUNER is selected (expect when T. CALL function is engaged).</td></tr>
<tr><td>Q12</td><td>Scanning amp input Switch</td><td>Scanning amp of the tape when Q12 is ON. It functions as the FM audio modulation detect amp when Q12 is set to OFF.</td></tr>
<tr><td>Q13, 14</td><td>Scanning amp time constant Switch</td><td><table>
<tr><th>Mode</th><th>PLAY</th><th>FF/REW</th><th>FM</th></tr>
<tr><td>Q13</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>Q14</td><td>ON</td><td>OFF</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>Q15, D6
D5</td><td>ACC detector</td><td>When the voltage at the ACC line is lowered below approx. 8.5 V, Q16 is turned OFF to apply the high level signal to IC9 pin 53.</td></tr>
<tr><td>Q16, 17
D7, 8</td><td>System hardware reset</td><td>By the reset switch, Q17 turns ON to turn Q16 ON while the high level signal is applied to IC9 pin 52 so that the high-inverting signal is applied to IC9 pin 30 for hardware reset of the system.</td></tr>
<tr><td>IC7</td><td>Power reset</td><td>Resets the system when the power to IC9 is turned ON.</td></tr>
<tr><td>Q18, 19</td><td>Main motor power switch</td><td>Supplies the power to the main motor of the cassette mechanism when IC9 pin 46 goes high and Q19 and Q18 are turned ON.</td></tr>
<tr><td>Q20, 21</td><td>Inverter</td><td>Rectifies the waveform of the reel pulse from the cassette mechanism to apply the resulted signal to pins 37 and 38 of IC9.</td></tr>
<tr><td>Q23, 24</td><td>Buffer</td><td>Buffer amp for audio signal between pre-fader and power amp.</td></tr>
<tr><td>Q25, 26</td><td>Loudness Switch</td><td>Turns loudness OFF when Q25 and Q26 are ON.</td></tr>
<tr><td>Q27, 28</td><td>Audio Mute transistor</td><td>When ON, audio muting is being engaged.</td></tr>
<tr><td>Q29, 30</td><td>DK volume up transistor</td><td>When Q29, 30 are OFF, volume is increased.</td></tr>
<tr><td>Q33</td><td>Driver for Q29, Q30</td><td>When Q33 turns ON, Q29 and Q30 are turned OFF.</td></tr>
<tr><td>Q34, 35</td><td>Mute 1 driver</td><td>Inputs the Mute 1 signal from pin 44 of IC9 to drive Q27 and Q28.</td></tr>
<tr><td>Q36, 38</td><td>Mute 2 driver</td><td>Drives Q27 and Q28 when the Mute 2 signal from pin 43 of IC9 is applied or when the Mute signal is applied on system reset. When Q36 and Q38 are ON, muting is being engaged.</td></tr>
<tr><td>Q37</td><td>Driver for Q25 and Q26</td><td>Inputs the signal from IC18 pin 17 to drive Q25 and Q26. When Q37 is ON, loudness is OFF.</td></tr>
<tr><td>Q39~41</td><td>Dimmer control</td><td>Q39 turns ON and Q40 and Q41 are OFF when dimmer is engaged.</td></tr>
<tr><td>Q42</td><td>Beep buffer</td><td>Buffer amp for beep signal</td></tr>
<tr><td>Q43, 45</td><td>Green illumination driver</td><td>Q43 and Q45 turn ON when the green illumination is selected.</td></tr>
<tr><td>Q44, 46</td><td>Amber illlumination driver</td><td>Q44 and Q46 turn ON when the amber illumination is selected.</td></tr>
</table>

CIRCUIT DESCRIPTION

<table>
<tr><th>Ref. No.</th><th>Use, Function</th><th>Operation, Condition and Compatibility</th></tr>
<tr><td>Q47</td><td>ST lamp inverter</td><td>During stereo reception, IC15 pin 17 goes low and Q47 turns OFF to supply the high level signal to IC9 pin 6.</td></tr>
<tr><td>Q48, 49</td><td>Dolby B/C select switch</td><td><table>
<tr><th>Mode
Transistor</th><th>OFF</th><th>B</th><th>C</th></tr>
<tr><td>Q48</td><td>ON</td><td>OFF</td><td>OFF</td></tr>
<tr><td>Q49</td><td>—</td><td>ON</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>Q50</td><td>Illumination signal inverter</td><td>Turns ON when illumination/dimmer line is at high level to supply the low level signal to IC9 pin 51.</td></tr>
<tr><td>Q51</td><td>Mutual reset signal inverter</td><td>When the mutual reset input is at low level, Q51 turns OFF to supply the high level signal to IC9 pin 35.</td></tr>
<tr><td>Q52</td><td>Metal switch</td><td>Turns OFF when metal tape is selected to supply the low level signal to IC9 pin 45 and Q11 on X89 board.</td></tr>
<tr><td>Q53, 54</td><td>FM +5 V switch</td><td>Turns ON in FM band to supply the +5 V power to IC12 and IC13.</td></tr>
<tr><td>Q61, 62</td><td>Tape EQ Mute transistor</td><td>Turns ON when IC9 pin 11 is at high level to apply muting of tape signal.</td></tr>
<tr><td>Q65</td><td>ANRC buffer</td><td>Signal meter buffer for ANRC.</td></tr>
<tr><td>Q66</td><td>CRSC trasistor</td><td>Turns ON when the multipath occurs by the pulse from IC15 pin 4 to set to monaural mode forcibly.</td></tr>
<tr><td>Q67</td><td>AF Search Mute transistor</td><td>Turns ON when IC9 pin 44 is at high level to reduce the shock noise during AF Search.</td></tr>
<tr><td>Q68</td><td>FM Mute switch</td><td>Turns ON when the FM Mute signal is at high level to invert the signal at IC17 pin 5 to low to turn the signal between pins 3 and 4 of IC17 OFF. (IC17: Analog switch)</td></tr>
<tr><td>Q69</td><td>AM SD switch</td><td>Transistor for detection of SD signal in AM mode. Turns ON when SD signal is present.</td></tr>
<tr><td>Q70</td><td>IC16 select switch</td><td>Turns ON in AM mode by the input control of IC16. Turns OFF in FM mode.</td></tr>
<tr><td>Q71</td><td>AGC cut</td><td>Turns ON during seek operation.</td></tr>
<tr><td>Q72</td><td>Local/DX switch</td><td>Controls the Local/DX switch of FM F/E. Turns ON when local is selected, and turns ON during seek operation.</td></tr>
<tr><td>Q73, 74</td><td>AM LPF</td><td>Amplifier for AM low-pass filter.</td></tr>
<tr><td>Q75</td><td>AM LPF switch</td><td>Q75 turns ON in MW mode to supply the low level signal to IC17 pin 6. Q75 turns OFF in LW mode to switch the time constant between MW and LW.</td></tr>
<tr><td>Q76</td><td>MW/LW switch</td><td>Q76 turns OFF in LW mode to turn Q75 OFF. Q76 turns ON in MW mode to supply the high level signal to the BS terminal of the AM tuner.</td></tr>
<tr><td>Q77</td><td>FM LPF</td><td>Amplifier for FM low-pass filter</td></tr>
<tr><td>Q78, 79</td><td>FM LPF switch</td><td>Q78 and Q79 turn OFF during AF search or seek operation. Turns ON in reception mode to supply the high level signal to IC17 pin 12 to switch the time constant of the low-pass filter during searching and during broadcast reception.</td></tr>
<tr><td>Q80</td><td>FM +B switch</td><td>Turns ON in FM mode to supply the FM +B signal.</td></tr>
<tr><td>Q81</td><td>AM +B switch</td><td>Turns ON in AM mode to supply the AM +B signal.</td></tr>
<tr><td>Q91</td><td>DK signal inverter</td><td>Turns ON when the DK switch for SDK system is set to ON.</td></tr>
<tr><td>Q92</td><td>P.CON switch</td><td>Turns ON when P.CON (power controller) is turned ON.</td></tr>
<tr><td>Q93</td><td>P.CON transistor</td><td>Turns ON when P.CON (power controller) is turned ON to output the P.CON signal.</td></tr>
<tr><td>Q94</td><td>P.CON transistor protection circuit</td><td>When overcurrent of Q93 is detected, Q94 turns ON to turn Q93 OFF for protection of Q93.</td></tr>
<tr><td>Q95</td><td>P.CON protection reset transistor</td><td>When P.CON is inverted to high, Q95 turns ON to set the protection transistor Q94 to OFF forcibly to inhibit the operation of the protection circuit temporarily. When the protection circuit is engaged, the protection circuit can be reset by inputting the P.CON inverting signal to high.</td></tr>
</table>

CIRCUIT DESCRIPTION

Ref. No.	Use, Function	Operation, Condition and Compatibility
IC5, 6	Tape scanning amp, FM modulation detect amp	Amplifier for detection of gaps between tuns on cassette tape and FM modulation level.
IC8	PRE-OUT amp	Amplifier for the signal output from the Pre-Out terminals.
IC9	Master microcomputer	Microcomputer controls the entire system.
IC10	Memory	Non-volatile memory used to store the data in B, U mode.
IC11	Reset IC	Reset IC for IC12.
IC12	RDS sync microcomputer	Synchronizes the RDS data by every groups and corrects the error.
IC13	RDS decoder IC	Decodes the RDS data using the composite signal.
IC14	Dolby B/C	Decodes the Dolby B and C type noise reduction.
IC15	NC, MPX	IC used to cancel the FM noise and stereo decoding.
IC16	Amp with FM/AM switch	Switches the audio signal between FM and AM and amplifies the selected signal.
IC17	Analog switch	* A/4: FM composite signal switch. Cuts the SDK/RDS signal and the composite sinal to the modulation detection amp when the FM Mute signal is at high level. * B/4: Not used. * C/4: AM LPF time constant switch. Turns ON in LW mode and turns OF in MW mode. * D/4: FM LPF time constant switch. Turns ON while receiving the FM broadcast and turns OFF during search operation.
IC18	PLL IC	PLL IC for digital tuning. Other than tuning operation, input of SD 2, 3 signals, loudness control, LO/DX control and AFC (AGC) control. Controlled by IC9 and the serial data.
IC19	SDK HIC	Detects the SK, BK and DK signal in the SDK system.
IC31	PWR Amp	Power amplifier
IC32	TONE Amp	NF-type tone control amplifier.

Daughter Unit (X89-1202-70)

Ref. No.	Use, Function	Operation, Condition and Compatibility
Q1	IF Amp	Amplifies the IF signal in FM broadcast
Q2	AFC Switch	Switches the time constant for the AFC terminal. Turns ON during reception and turns OFF during seek and AF Search operation.
Q3	FM Mute Control	Turns OFF during seek and AF Search operation to turn Q4 OFF and turn Q5 ON.
Q4	FM Mute Switch 1	Turns ON by the control from Q3 to supply the FM Mute signal (from IC1 pin 6) to IC1 pin 12.
Q5	FM Mute Switch 2	Turns ON by the control from Q3 to ground the FM Mute signal with the 8.2-kohm resistor R18.
Q6	Signal meter buffer	Reduces the effect to the signal meter line caused by the SD detection circuit consising of IC2 and IC3.
Q7, 8	Schmidt circuit	Reduces the fluctuation of the FM Mute signal.
Q9	RDS composite buffer	Converts the RDS composite signal waveform-shaped by IC5 into +5 V signals.
Q11	MTL (Metal) Switch	Turns OFF when the Metal tape is selected. Normally ON.
Q12	FWD/REV Switch	Turns ON in forward mode and turns OFF in reverse mode.
Q13, 14	AVR for IC7	Consists the series-type AVR with Q13, Q14 and D8.
Q15	Kick Switch	Turns OFF when applying the kick voltage to the sub motor of the cassette mechanism. Normally ON.
IC1	IF detector	IF amplifier and FM detector.
IC2, 3	SD detector	Detects the SD1, SD2 and SD3 signals by the comparator. SD1: Goes low when ANT input is more than 20 dBu. SD2: Goes low when ANT input is more than 30 dBu. SD3: Goes low when ANT input is more than 40 dBu.
IC4	Composite signal buffer	Front-end buffer for RDS BPF (band-pass filter)
IC5	Limiter amp	Amplifies and rectifies the composite signal selected by the RDS BPF (band-pass filter).
IC6	Tape EQ IC	With the Tape EQ Metal select switch.
IC7	Sub-motor driver	Drives the sub-motor in the cassette mechanism.

CIRCUIT DESCRIPTION

Modulation Format of RDS Broadcast

1. Subcarrier Frequency

Subcarrier frequency: 57 kHz ±6 Hz

2. Subcarrier Phase

During stereo broadcast, the subcarrier is always in-phase or at a right angle with the 3rd harmonics of the 19 kHz pilot tone.

While the RDS data signal is transmitted together with the ARI (SDK) signal at the same time, the recommended phase angle of these two subcarriers is 90° ±10°.

3. Subcarrier Level

The recommended nominal deviation of the main FM carrier wave by the subcarrier is ±2.0 kHz.

When the RDS data signal is transmitted together with the ARI (SDK) signal, the recommended deviation by the ARI subcarrier is ±3.2 kHz.

4. Modulation Method

The subcarrier is amplitude-modulated by the biphase coded signal. (See the figure below.)

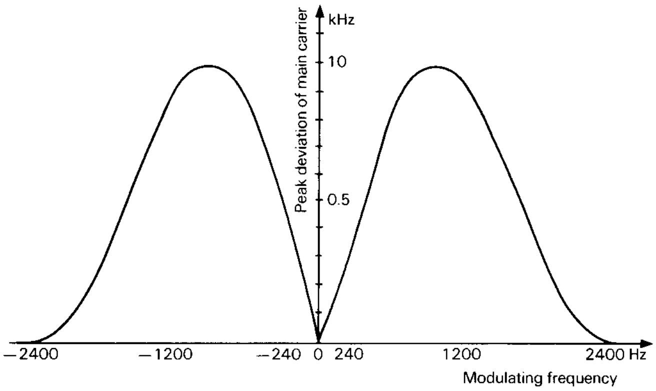
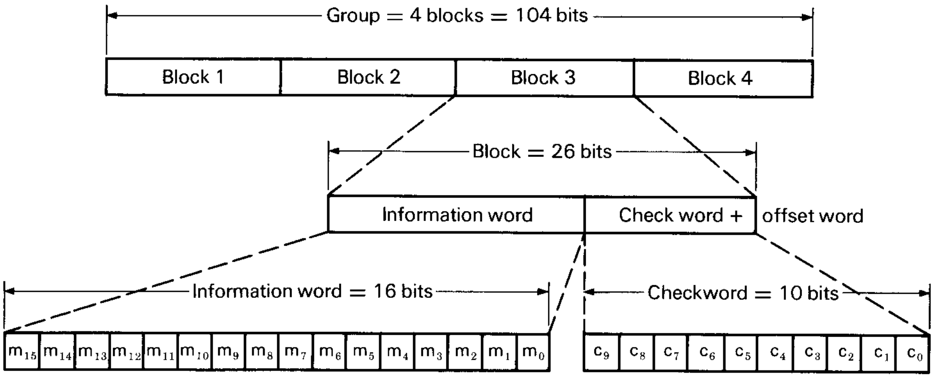


Fig. 4a. — Spectrum of biphase coded radio-data signals

RDS Broadcast Data Structure

1. Bass-band Coding Structure

The coding structure of the bass-band is shown in the figure below. One group consists of the 104 bits of data and divided into four blocks of 26 bits, and each block consists of a data word and a check word.


Group = 4 blocks = 104 bits
Block 1
Block 2
Block 3
Block 4
Block = 26 bits
Information word
Check word +
offset word
Information word = 16 bits
Checkword = 10 bits
m15 m14 m13 m12 m11 m10 m9 m8 m7 m6 m5 m4 m3 m2 m1 m0
c9 c8 c7 c6 c5 c4 c3 c2 c1 c0

(Coding structure of bass-band)

2. Group Type

At present, eight group types are specified and they are defined in Version A and B except for types 4 and 15.

The eight group types have been defined and the applications of each group are as follows:

Group type						Applications
Decimal value	Binary code					
	A_3	A_2	A_1	A_0	B_0	
0	0	0	0	0	X	Basic tuning and switching information (§ 1.3.1)
1	0	0	0	1	X	Programme item number (§ 1.3.2)
2	0	0	1	0	X	Radiotext (§ 1.3.3)
3	0	0	1	1	X	Information about other networks (§ 1.3.4)
4	0	1	0	0	0	Clock-time and date (§ 1.3.5)
5	0	1	0	1	X	Transparent channels for text or other graphics (32 channels) (§ 1.3.6)
6	0	1	1	0	X	In-house applications (§ 1.3.7)
7—14						Applications not yet defined
15	1	1	1	1	1	Fast basic tuning and switching information (§ 1.3.8)

a: Group type
b: Decimal value
c: Binary code
d: Applications
e: Basic tuning and switching information (#1.3.1)
f: Programme item number (#1.3.2)
g: Radiotext (#1.3.3)
h: Information about other networks (#1.3.4)
i: Clock-time and date (#1.3.5)
j: Transparent channels for text or other graphics (32 channels) (#1.3.6)
k: In-house applications (#1.3.7)
l: Applications not yet defined
m: Fast basic tuning and switching information (#1.3.8)

"X" shows that the value is either "0" (version A) or "1" (version B).

The recommended minimum repetition rate for some major applications are as follows:

Applications	Group types which contain this information	Recommended minimum repetition rate per second
Programme identification (PI) code	all	11*
Programme service (PS) name	0A, 0B	1*
Programme type (PTY) code	all	11
Traffic programme (TP) identification code	all	11
Alternative frequency (AF) code	0A	4**
Traffic announcement (TA) code	0A, 0B, 15B	4
Decoder identification (DI) code	0A, 0B, 15B	1
Music/speech (M/S) code	0A, 0B, 15B	4
Programme item number (PIN) code	1A, 1B	1
Radiotext (RT) message	2A, 2B	0.2

a: Applications
b: Group types which contain this information
c: Recommended minimum repetition rate per second
d: Programme identification (PI) code
e: Programme service (PS) name
f: Programme type (PTY) code
g: Traffic programme (TP) identification code
h: Alternative frequency (AF) code
i: Traffic announcement (TA) code
j: Decoder identification (DI) code
k: Music/speech (M/S) code
l: Programme item number (PIN) code
m: Radiotext (RT) message

* The effective codes for these two items are always transmitted with the recommended minimum repetition rate defined when the transmitter transmits the normal broadcast programme.

** The alternative frequency (if exists) for the transmitter which transmits the same programme signal are transmitted periodically among 25 stations listed. When the alternative frequency is not transmitted, the type 0B group (that does not include the alternative frequency information) should be used instead of the type 0A.

CIRCUIT DESCRIPTION

Data provided with the KRC-951RDS

1. **PI (Programme identification)**
   Data identifying the stations broadcasting the same programme.
2. **PS (Programme service name)**
   Data for displaying the station name, to be displayed within 8 characters.
3. **AF (List of alternative frequencies)**
   Data for the list of alternative frequencies of the stations broadcasting the same programme.
4. **TP (Traffic-programme identification)**
   Data for identification of the traffic programme stations; corresponding to the SK signal used in ARI system.
5. **TA (Traffic-announcement identification)**
   Data identifying that the station is broadcasting the traffic information; corresponding to the DK signal used in ARI system.
6. **CT (Clock-time and date)**
   Data of present time and date transmitted by every 2 minutes. (Date is not displayed in the KRC-951RDS.)

RDS Features of the KRC-951RDS

1. **Fast AF Search**
   - One search operation takes approx. 30 — 40 ms. During this operation, two alternative stations are checked according to the AF list.
   - Conditions for AF search:

   a) Antenna input level

Less than 40 dBu	Once per approx. 13 seconds
Less than 30 dBu	Once per approx. 7 seconds
Less than 20 dBu	Once per approx. 2 seconds

   AF Search operation is not activated when the antenna input level is more than 40 dBu.

   b) Audio modulation level:
   AF Search is activated with the modulation deviation of less than approx. ±8.5 kHz. Therefore, even when the condition (a) is satisfied, AF Search will not be activated if the condition (b) is not satisfied.

   - AF Search switching condition:
   AF Search is switched only when the antenna input level of the alternative station searched is higher than that of the currently receiving station.
   The antenna input level is checked in the following four steps:

1	Less than 20 dBu
2	More than 20 dBu, less than 30 dBu
3	More than 30 dBu, less than 40 dBu
4	More than 40 dBu

2. **PI Search**
   When the RDS data cycle is unlocked and no alternative station is found after checking all the AF list, with the antenna input level of less than 20 dBu continued for more than 5 seconds, the seek operation is activated to find the same PI code for one cycle.
   When the same PI code is not found after seeking for one cycle, the previous station is received for 5 seconds and if the above condition is still continued, the seek operation is activated again. This operation will be continued endlessly unless the alternative station is found.
3. **LNSS (Local Network Search System)**
   The PI code consists of four words, and the AF Search and PI Search switched it as the same station when all the four words are coincided. The LNSS functions so that the PI code is judged as the same station even if the second word is different.
   Stations having the PI code with different second word normally broadcast the same programme, but broadcast the unique local programme temporarily. These stations are popular in local areas where the broadcasting equipment is not sufficient.
   Therefore, with the LNSS switch ON, since the stations broadcasting the same programme but with the different PI code can be searched, the AF Search or PI Search functions can be used effectively in the area where the network is not provided sufficiently.
   However, even with the LNSS switch set to ON, when the antenna input level of the currently receiving station is more than 20 dBu, the station with another PI code will not be searched. The station with another PI code will be searched with the antenna input level of less than 20 dBu. This is because the station with another PI code may broadcast the different programme and it is not necessary to search the station with another PI code when the stations with the same PI code can be received sufficiently.
4. **CT Function**
   In the area where the clock data is transmitted, the time display is available.
   Since the clock data is transmitted by every two minutes, it takes at least 3 minutes until the clock data is securely received.
5. **Auto Memory**
   The Auto Memory function is slightly different between FM Band 1 and FM Band 2.
   - FM Band 1:
     When the FM1 band is selected, only the RDS stations are memorized. For memory conditions, when the SD signal is present, the PI code is detected and it is judged whether or not the received station is RDS station. After the PI code is secured, the PS code definition is waited for 15 seconds in maximum. When the PS code is not detected within 15 seconds, the received station is not memorized and proceeded to the next step.
     Therefore, when the Auto Memory is activated in FM1 band, the station name (PS) is also memorized.

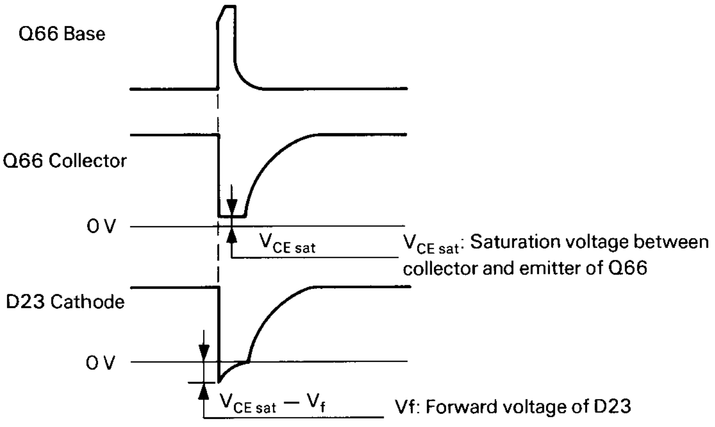
CIRCUIT DESCRIPTION

- FM Band 2:
  When the FM2 band is selected, all the stations having the SD signal will be memorized. Since checking whether or not it is RDS station is not done, the PS code will not be memorized.

Operation Description: CRSC Circuit

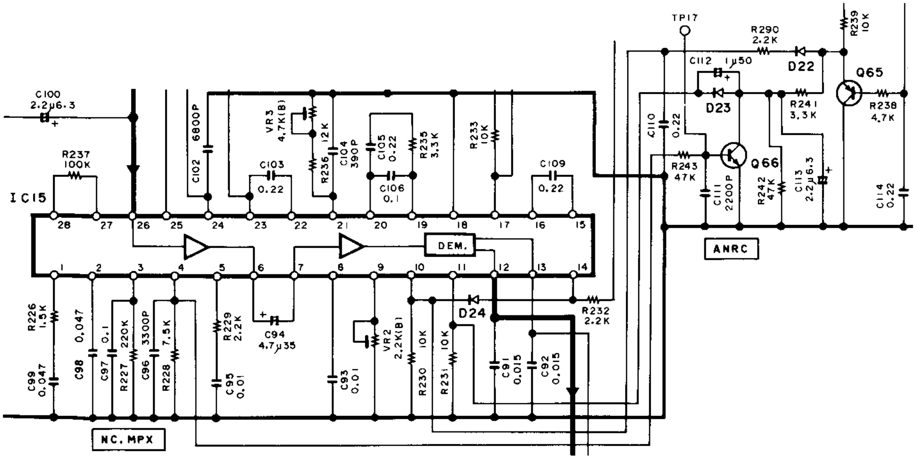
The CRSC operation is described by the addition of C112 and D23. Q66 is the transistor for CRSC which operates by the noise pulse from the noise canceller.

With Q66 OFF, the Vf voltage of D23 is sufficiently charged in C112. At this time, when Q66 is turned ON by the noise pulse, the voltage change at the collector of Q66 is differentiated by C112 and the resulted waveform is output to the cathode of D23.



Q66 Base
Q66 Collector
0 V
$V_{CE\ sat}$
$V_{CE\ sat}$: Saturation voltage between collector and emitter of Q66
D23 Cathode
0 V
$V_{CE\ sat} - V_f$
Vf: Forward voltage of D23

That is, when Q66 is turned ON, since the control voltage at IC15 pin 11 is lowered below 0 V completely by the operation of C112 and D23, the CRSC effect is improved.



TP17
R290 2.2K
R239 10K
C112 1μ50
D22
Q65
C100 2.2μ6.3
R237 100K
IC15
C102 6800P
VR3 4.7K(B)
R236 12K
C104 390P
C105 0.22
R235 3.3K
R233 10K
C103 0.22
C106 0.1
C109 0.22
C110 0.22
D23
R241 3.3K
R238 4.7K
R243 47K
Q66
C111 2200P
R242 47K
C113 2.2μ6.3
C114 0.22
DEM.
ANRC
D24
R232 2.2K
R226 1.5K
C99 0.047
C98 0.047
C97 0.1
R227 220K
C96 3300P
R228 7.5K
R229 2.2K
C94 4.7μ35
C95 0.01
C93 0.01
VR2 2.2K(B)
R230 10K
R231 10K
C91 0.015
C92 0.015
NC. MPX

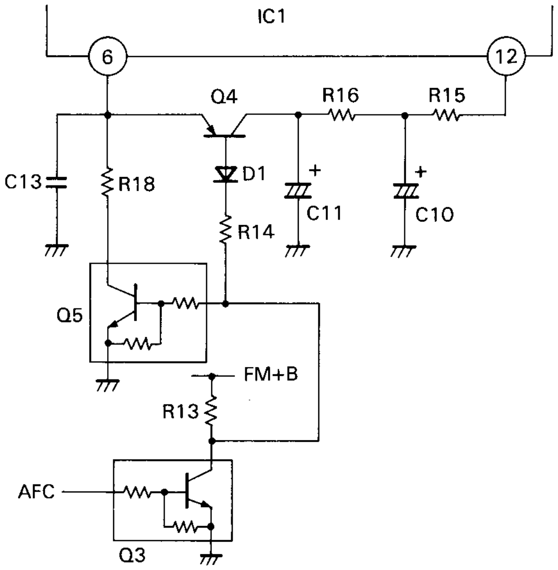
FM Mute SW 1, 2

To activate the fast AF Search function, the two switch transistors are used for the FM Mute signal for quicker falling edge of the SK detection signal.

IC1 pin 6 is FM Mute Output, and pin 12 is Mute Input.

During AF Search or seek operation, the AFC control signal goes low to turn Q3 OFF and turn Q5 ON. When Q5 is turned ON, IC pin 6 is short-circuited by 8.2-kohm resistor R18, therefore, the falling edge of the FM Mute signal is done guicker. And at the same time, since Q4 is turned OFF, C11 and C10 are separated and the falling edge of the FM Mute signal is more quicker.

Since the SD detection is made possible when the FM Mute signal is dropped, the SD detection can be done at a high speed by the above transistor switch.



IC1
6
12
Q4
R16
R15
C13
R18
D1
C11
C10
R14
Q5
FM+B
R13
AFC
Q3

CIRCUIT DESCRIPTION

FUNCTIONS AND SPECIFICATIONS OF RDS TUNER

Channel Spacing List

Receiving Band	Manual	Auto	Auto Memory
FM-1	50 kHz	50 kHz	100 kHz (RDS stations only)
FM-2	50 kHz	50 kHz	50 kHz
MW	9 kHz	9 kHz	9 kHz
LW	1 kHz	9 kHz	9 kHz

* In case of Auto Memory, if the operation starts from the frequency other than the above step, the currently receiving frequency is memorized first. After then, the seek operation is continued with the normal channel steps specified as above.

Keys and Indicators concerning RDS Functions

Keys and indication concerning the RDS functions are described below.

(1) TI Key (Traffic Information)
Used for the reception of traffic information. The same function as the conventional SDK key is provided, however, the conventional SK signal is ORed with TP and the DK signal is ORed with TA.

(2) TI Indicator
ON/OFF indication of the TI key.

(3) LNSS Key (Local Area Network Search System)
With this key activated, the second word of the PI code is ignored for the AF Search or PI Search functions during RDS reception.
(Lightly press the LNSS/RDS key.)

(4) LNSS Indicator
ON/OFF indication of the LNSS key.

(5) CLOCK Key
Used to select the clock function. For details, refer to the section describing the clock function.

(6) TP Indicator
Lights while receiving the station broadcasting the traffic information. (Either press of SK/TP.)

(7) TA Indicator
Lights while receiving the traffic information is being received. (Either press of DK/TA.)

(8) RDS Key
Valid/invalid select key for the AF/PI Search function. With the RDS OFF, neither the AF Search nor PI Search will function. (Keep pressing the LNSS/RDS key.)

(9) RDS Indicators)
I: Lights when RDS is ON.
II: Goes off when RDS is OFF.
III: Blinks when RDS data is not input with RDS ON (RDS synchronization is unlocked.)

Detachable System

This unit can be detached from the sleeve, but the lithium battery for backup is not incorporated. For this reason, all the data to be memorized are stored in the non-volatile memory and the power to the microcomputer is completely shut out.

As the non-volatile memory (EEPROM), CXK1013P manufactures by SONY is used.
The number of erasing/writing times of the EEPROM is limited as follows:

Times × years = 10^5

Therefore, when the service life is settled as 5 years, the number of erasing/writing times is assured up to 54 times a day.
Example: One preset channel is memorized for 54 times every day.
With the above format, the following sections are different from those provided with the conventional receivers;

(1) Handling of last channel memory:
Since the last channel memory writes and reads the data by every two steps for seek operations, etc. and this cause trouble on speed (EEPROM required 35 ms for one-time write/read operation) and times, writing is done only when the seek operation is stopped.
Therefore, if the unit is detached or power is turned OFF during seek operation, the last received channel before starting the seek operation will be received first when the power is turned ON again.

(2) If the unit is detached during writing operation, since the data may not be read out correctly, be sure to check the data when it is read out.

CIRCUIT DESCRIPTION

Clock Function on Detaching/Attaching

This unit is the RDS receiver and is equipped with the clock display function (in 24-hour format).

- Conditions for clock display:
  1) Clock priority mode
  2) CT data of RDS is once securely received.

  The above conditions are satisfied, the display is changed to the clock indication.
- If the above conditions are not satisfied, the clock display shows "- : - -".

The basic timing and conditions to change to the clock display are same as those in the receivers providing the clock function, but it is different that the clock display shows the above bar display until the CT data of RDS is securely received. And no time adjustment functions are provided with the unit. This is because the time adjustment is always done automatically while the RDS data is received.

KEY MATRIX

	KR0 (25)	**KR1 (24)**	**KR2 (23)**	**KR3 (22)**	**KR4 (21)**
KS0 (20)	AM SEARCH DOWN	FM SEARCH UP	DOWN REW	UP FF	EJECT /STOP
KS1 (19)	AUTO (TP-SEEK)	LOCAL /A*MEMO	CLOCK	TI	LNSS /RDS
KS2 (18)	PRESET1 B/C	PRESET2 B-SKIP	PRESET3 T-CALL	PRESET4 REPEAT	PLAY /PROG
KS3 (17)	PRESET5 1*SCAN	PRESET6	PRESET7	PRESET8	LOUDNESS /ILLMI

( ) PIN NUMBER

* 50-pin key is used only for the POWER key. (This is because the power should be turned ON from the standby mode.)

CIRCUIT DESCRIPTION

Key Description

KEY	Functions
AM	* TUNER mode: MW/LW band select key. Pressing this key alternates between MW and LW bands. When this key is pressed during FM reception, the last received band MW or LW is recalled.
FM	* TUNER mode: FM band select key. Pressing this key alternates between FM1 and FM2 bands. When this key is pressed during MW/LW reception, the last received band FM1 or FM2 is recalled.
DOWN (REW/SEARCH/ DOWN)	* TUNER mode: Functions as the frequency down key. Pressing this key enters the manual down or down seek mode with Auto or Manual mode engaged. * TAPE mode: (Tuner mode is recalled with the TUNER CALL ON.) When this key is kept pressed, the tape is rewound. * TAPE mode: When this key is pressed lightly, the unit enters the DPSS Rewind Search operation starts. After starting, each time this key is pressed, the number of tunes to be skipped is increased (up to 9 tunes).
UP (FF/SEARCH/UP)	* TUNER mode: Functions as the frequency up key. Pressing this key enters the manual up or up seek mode with Auto or Manual mode engaged. * TAPE mode: (Tuner mode is recalled with the TUNER CALL ON.) When this key is kept pressed, the tape is fast-forwarded. * TAPE mode: When this key is pressed lightly, the unit enters the DPSS FF Search operation starts. After starting, each time this key is pressed, the number of tunes to be skipped is decreased (up to 9 tunes).
EJECT	* TAPE mode: When this key is pressed, the deck enters the pause mode (tuner ON). Pressing it again ejects the tape. This key is effective from any conditions in the TAPE mode. * TUNER mode: When this key is pressed with the tape in the pause mode, the tape is ejected. At this time, the tape sound is not muted.
PLAY/ PLOG	* TUNER mode: When this key is pressed, the tape is loaded to the mechanism, and if it is judged that there is no tape, the unit enters the ejecting operation. (Tuner mode maintains until the microcomputer judges that the tape exists.) * TAPE mode: Pressing this key enters the play mode from any mechanism status. It also functions as the reset key for scanning operations.
AUTO	Used to select the operation mode for the UP/DOWN keys. Pressing this key alternates between Manual and Auto operation modes. In the Tape mode with the TI set to ON, it functions as the SK Up Seek key. (Effective only in the TUNER mode.)
LOCAL/ A*MEMO	When this key is pressed lightly, the reception mode is switched between LOCAL and DX. When this key is kept pressed, the Auto Memory function is activated. The Auto Memory function differs depending on the receiving band. For details, refer to the section describing the Auto Memory function. (Effective only in the TUNER mode.)
CLOCK	Clock display select key. For details, refer to the section describing the clock functions.
TI	Traffic information reception select key. For details, refer to the section describing the SDK system.
LNSS/ RDS	* When this key is pressed lightly, the unit enters the search mode for the stations having another PI code. In AF Search operation, the stations having the same PI code are checked while ignoring the second word of the PI code. For details, refer to the section describing the AF Search function. * When this key is kept pressed, it functions as the AF/PI function select key. Pressing it again inhibits the search operation.
LOUD/ ILLMI	* When this key is pressed lightly, it functions as the LOUDNESS ON/OFF key. Each time the key is pressed, the loudness function is turned ON and OFF alternately. * When this key is kept pressed, it functions as the illumination color select key. Each time the key is pressed, the illumination color is changed between amber and green.
PRESET 1 DOLBY B/C	* TUNER mode: Functions as the preset number 1 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 1. * TAPE mode: Functions as the Dolby B/C noise reduction select key. Each time the key is pressed, the Dolby NR is changed from OFF, type B and type C sequentially.

CIRCUIT DESCRIPTION

KEY	Functions
PRESET 2 BLANK SKIP	* TUNER mode: Functions as the preset number 2 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 2. * TAPE mode: Functions as the Blank Skip key. When this key is pressed, the blank skip function is activated.
PRESET 3 TUNER CALL	* TUNER mode: Functions as the preset number 3 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 3. * TAPE mode: Functions as the Tuner Call key. When this key is pressed, the Tuner Call function is activated.
PRESET 4 REPEAT	* TUNER mode: Functions as the preset number 4 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 4. * TAPE mode: Functions as the repeat key. When this key is pressed, the tune currently being played back will be repeated.
PRESET 5 INDEX SCAN	* TUNER mode: Functions as the preset number 5 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 5. * TAPE mode: Functions as the Index Scan key. When this key is pressed, the first 10 seconds of each tunes will be played back sequentially from the subsequent tune of the current tune.
PRESET 6	* TUNER mode: Functions as the preset number 6 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 6.
PRESET 7	* TUNER mode: Functions as the preset number 6 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 7.
PRESET 8	* TUNER mode: Functions as the preset number 6 key. When this key is pressed lightly, the corresponding preset memory is recalled. When it is kept pressed, the received station is stored in the preset memory No. 8.
POWER/ P-SEEK	* TUNER mode: When this key is pressed lightly, the Preset Seek operation starts. When it is kept pressed, the power to this unit is turned OFF. * TAPE mode: Pressing this key lightly is invalid. (No function) When this key is kept pressed, the power is turned OFF.

CIRCUIT DESCRIPTION

Pin Description

Pin No.	Pin Name	I/O	Name	Description
1	PA1	O	PLL CE	CE (Chip Enable) pin to PLL (LC7218)
2	PA0	O	CLKOUT	Clock pin to PLL (LC7218), EEPROM (Used also for initial setup of full-logic/manual select.)
3	PB7	I	DATA IN	Data input pin from PLL (LC7218), EEPROM
4	PB6	O	DATA OUT	Data output pin to PLL (LC7218), EEPROM
5	PB5	O	ROM CE	CE (Chip Enable) pin to EEPROM (CXK1013P)
44	PF2	O	HIGH MUTE	Mute output pin for fast search
6	PB4	I	STEREO IN	Stereo input pin
7	PB3	I	SD1	Tuner station exist detect pin (20 dB sensitivity)
9	PB1	I	DK IN	DK input
8	PB2	I	SK IN	SK input
12	PC6	I	RCV IN	Sync detect input pin from sync microcomputer (Active low)
13	PC5	I	DATA START	Data Start input pin from sync microcomputer
14	PC4	I	SDATA IN	Data input pin from sync microcomputer
15	PC3	O	ILLMI AMBER	Illumination amber select pin
16	PC2	O	ILLMI GREEN	Illumination green select pin
45	PF1	I	METAL IN	Metal Tape detect pin (Active low) (Metal Out pin on the manual select mechanism)
17	PC1	O	KS3	Dynamic key matrix key scan 3
18	PC0	O	KS2	Dynamic key matrix key scan 2
19	PD7	O	KS1	Dynamic key matrix key scan 1
20	PD6	O	KS0	Dynamic key matrix key scan 0
21	PD5	I	KR4	Dynamic key matrix key return 4
22	PD4	I	KR3	Dynamic key matrix key return 3
23	PD3	I	KR2	Dynamic key matrix key return 2
24	PD2	I	KR1	Dynamic key matrix key return 1
25	PD1	I	KR0	Dynamic key matrix key return 0
26	V_{SS}	—	V_{SS}	GND pin of microcomputer (Should be connected to pin 58.)
27	PD0	I	KICK	Kick pin for cassette protection
28	XTAL	—	XTAL	Crystal connect pin (8.38 MHz)
29	EXTAL	—	EXTAL	Crystal connect pin
30	RESET	I	RESET	Microcomputer reset input pin (Active low)
31	PE7	O	BUZER	Operation Buzzer output pin (2 kHz)
32	PE6	O	LCD INT	LCD Inhibit output pin LCD forced-off output pin
51	PG3	I	ILLMI IN	Illumination Input pin Illumination ON/OFF input pin (Active low)

Pin No.	Pin Name	I/O	Name	Description
34	PE4	O	LCD DATAOUT	LCD Data output pin
35	PE3	I	RST IN	Mutual reset input pin (Active high)
36	PE2	O	LCD SCK	LCD clock output pin
37	PE1	I	REEL S	Tape reel pulse supply input pin
38	PE0	I	REEL T	Tape reel pulse take-up input pin
39	PF7	O	LCD CE2	LCD driver No. 2 CE (Chip Enable) output pin
40	PF6	O	LCD CE1	LCD driver No. 1 CE (Chip Enable) output pin
50	PG4	O	POWER	Power key static input pin (Active low)
42	PF4	O	DK OUT	DK output pin Volume increase output
43	PF3	O	MUTEL	Audio mute output pin
41	PF5	I	MUSIC IN	* TAPE mode: Tune exist detect pin * TUNER mode: Non-modulation signal detect pin
53	PG1	I	ACC	ACC detect pin (Sleep mode with ACC OFF) (Active low)
59	PA7	O	PCON OUT	Power control output pin
60	PA6	O	PON +B	Power ON +B output pin (Maintained for 3 seconds with ACC OFF.)
46	PF0	O	MAIN MOTOR	Main motor forward output pin
47	PG7	O	TAPE/RADIO	Audio circuit select pin (Low in the TAPE mode.)
48	PG6/INT6	O	DOLBY B/C	Dolby B/C select pin (B: Low, C: High)
49	PG5/INT5	O	DOLBY ON/OFF	Dolby ON/OFF select pin (OFF: Low)
33	PE5	I	STB SW	Standby-position detect pin
52	PG2/INT2	I	EXT RST	External reset input pin. Resets forcibly when restoring from the Reset Input with this pin at high level. When low, RAM check is done and perform resetting if RAM is destructive.
54	PG0/INT0	I	SCK IN	Clock input pin from sync microcomputer
55	MP	I	MP	Chip select mode select pin (Connected to GND)
56	NC	—	NC	No connection (Connected to V_{DD})
57	V_{DD}	I	V_{DD}	Positive power supply pin
58	V_{SS}	—	V_{SS}	Microcomputer GND pin (Should be connected pin 26)
61	PA5	I	MECH MODEIN	Mechanism mode pulse input pin (chatter 6 ms)
62	PA4	O	SUB MOTOR+	Mechanism sub-motor forward output pin
63	PA3	O	SUB MOTOR−	Mechanism sub-motor reverse output pin (Tape-advance output pin in manual mechanism mode)
64	PA2	I	PACK IN	Mechanism pack-in switch detect pin
10	PB0	O	FWD/REV	Equalizer amp FWD/REV switch-over pin (FWD: Low, REV: High) (FWD/REV input pin in manual mechanism mode)
11	PC7	O	EQ MUTE	Equalizer amp mute switch-over pin (EQ Mute input pin in manual mechanism mode)

LC7218 Option Port Pin Description

Pin No.	Pin Name	I/O	Name	Description
7	IN0	I	SD2 IN	SD No. 2 detect pin (Active low) 30 dB
8	IN2	I	SD3 IN	SD No. 3 detect pin (Active low) 40 dB
9	OUT0	O	FM +B	FM circuit power supply control pin (Active low)
10	OUT1	O	LOC OUT	Local/DX select *Set to DX during reception.
11	OUT2	O	AFC OUT	PLL time constant select pin (Active low)
12	OUT3	O	AM +B	AM circuit power supply control pin (Active low)
13	OUT4	O	AGC CUT	AGC cut output pin (Active low)
14	OUT5	O	BS	LW/MW circuit power supply control pin (MW: Low, LW: High)
17	OUT6	O	LOUD	Loudness ON/OFF pin (ON: High)

CIRCUIT DESCRIPTION

Tape Functions

- Dolby B/C noise reduction
- Auto metal tape selection
- New DPSS (New search method is used in this model)
- Full repeat (repeat cycle designation not provided)
- Blank skip (with ON/OFF switch)
- Index Scan (repeat cycle designation not provided)
- Tuner call

Detachable System and POWER ON/OFF

(1) From this model, the receiver units incorporating the in-house mechanism are equipped with the "key-off release" mechanism instead of "key-off eject".

(2) The mode immediately before turning the power off is stored in memory and the unit will start from the last mode when the power is turned on again. (If the power is turned off with the tape play mode, the unit enters the tape play mode when the power is turned on again.)

(3) As the tape, when the power is turned off and when the ACC is turned off while the unit is in the play mode, the 80 ms sub-motor is reversed to prevent the pinch-roller from being pressed excessively. If the unit is in the mode other than play mode, it will be stopped.

(4) As the tape, when the power is turned off and when the ACC is turned off, the current mode is stored for 15 seconds (for example, the fast-forward mode is memorized when the unit is during fast-forwarding), and when the power is turned on, the same operation is continued but 15 seconds later, the unit enters the play mode.

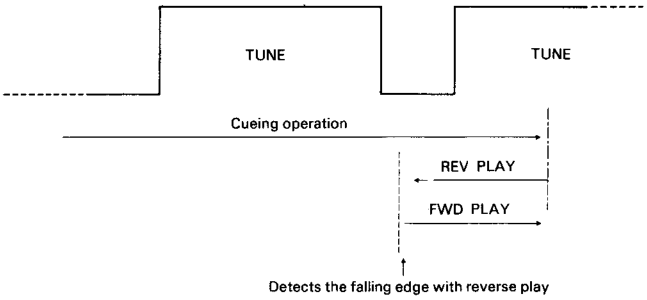
(5) While the tape is being loaded or ejected, the operation continues even when the power is turned off or when the ACC is turned off. Therefore, during loading, the unit enters the pause mode after judging whether or not the tape is present or not. If the tape is not present, the tape is ejected.

Music Scan Operation

For music scanning system, the complete scanning operation is provided to detect the beginning of the tune. For scanning operation, this model does not use the fast-forward or rewind mode which are used usually, but uses the method to return the tape to the beginning of the tune by the reverse play. The new music scanning method is described below.

In its structure of this mechanism, since the reel base is released during the mechanism is being transferred to the other mode, it is difficult to resume overrun at the beginning and end of the tape. (As the phenomenon, the beginning of the previous tune is slightly played back at the beginning of the tape, and the objective tune is slightly played back at the tape end.)

With the new system, since the beginning of the tune is detected by reverse play (falling edge of the tune), the gap between tunes can be detected correctly.



- For the protection program concerning music scan operation, refer to "Protection (Music scan)" section.
- For the tape running indication, the FF or REW indicator remains during reverse play.
- The EQ Mute function is switched over for fast-forwarding.

Auto Tuning and Traffic Information Reception with the RDS Tuner

With the RDS tuner, the best station can always be received by searching the AF (alternative frequency) list transmitted from the broadcast stations.

This means that the same program can be received continuously during long-distance drive without re-tuning operations, etc.

To search the AF list at the front-end without no interruption, fast search funtion is employed.

The TI switch function is the same as the SDK switch function of the conventional models, and the conditions to be the station broadcasting traffic information are effective for both SK and TP. Therefore, the TI search operation which is similar to conventional SK search stops at the SK or TP station according to the current conditions.

Using Method of Each Defined Data

- **PI data:**

  This data is used to check whether or not the received station transmits the "same broadcast program" when the strong-signal station is found by the AF/PI search.

- **PS data:**

  This data is used for indicating the characters on the display. The display appears all eight characters have been defined before defining the PS data. If the data is changed after defining the PS data, the display is replaced with the new one by 2 characters (digits) at a time.

  During reception of the FM-1 band, the PS data is also stored into the preset channel memory at the same time.

- **AF data:**
  This data is used for the frequency of the station broadcasting the same program (alternative frequency). The AF search starts at the moment when the received data is defined.
  When one AF list has been defined, searching operation starts at that moment.
- **CT data**
  The time indication becomes effective after the CT data is defined. After then, even when the data reception becomes impossible, the time display is still effective by the internal timer. The present time is automatically corrected by the CT data.
- **TA data**
  When the TA-ON data is defined, it is regarded that the "traffic information is being broadcast", but in this condition, the synchronization is unlocked for 5 seconds continuously, it is judged that the traffic information is finished. (This is for the protection for when the traffic information OFF data cannot be detected in the weak-signal area while receiving the traffic information.)

AF Search with the Single Tuner

By searching within the defined data, if the station having stronger signal is detected, it is tuned to automatically. At this time the AF list is not abandoned after switching over to the detected station. The frequency of the station before switching is also memorized in the new AF list.

This is because, in the situation in which the signal conditions vary one after another, when the strong-signal station is detected within the list during AF search, the receiver tunes to the detected station while the data of the previously received station may not be memorized in the AF list or the data of the same AF list may be memorized again and again. (With this method, switching back to the main station which was received before is made possible quickly.)

One of the conditions to change the frequency by the AF search include is that the new station should having the same PI code. After switching over, if the station does not have the same PI code, the previous frequency is restored.

Judgement of the signal strength is done by the three steps of 20 dB, 30 dB and 40- dB, and if the another station has the signal of the same strength, the frequency is not changed.

In case of the single tuner, since the muting time (sound interruption) is inevitable even when the fast search is performed, searching operation is always done in the non-modulation mode. The interval time of the AF search varies depending on the receiving condition of the station signal.

20 dB***	2 seconds
30 dB***	7 seconds
40 dB***	12 seconds

PI Search with the Single Tuner

The PI search operation starts when the RDS sync unlocked condition continued while the AF search is done for 2 cycles. With super-fast upward seeking operation, when the station satisfying the stop conditions is detected, the it is judged whether or not the same PI code is available, and if the conditions are satisfied, the frequency is changed to the detected station. (Stops after 5 seconds for one cycle.)

Since all the AF list may not be filled up under the weak signal conditions, this method is effective when the AF list of the stations having stronger signals cannot be stored.

Since the PI search searches the stations having the same PI code by upward seek operation, it takes much time for one cycle. Therfore, the frequency interval for skipping the frequency for upward seek is set at 100 kHz.

Another PI Search Method

Using the method B, it is possible to judge whether or not the detected station has the same PI code. At this time, when the LNSS switch is set to ON, the second word from the top of the PI code is ignored, the stations having the same PI code with different second word can be searched.

This PI search method is effective to search the stations having a slightly different PI code even when the signal condition of the receiving station becomes worse and the station broadcasting the same program.

RDS Memory

- Memorizing operation for frequencies is the same as that of the ordinary-type

(1) In case of the manual memory:

When the manual memory operation is performed while receiving the RDS station, the defined PI data and the PS data is stored in memory with the following conditions:

- When both PI and PS data is defined:
  → Both PI and PS are stored in memory
- Only PI is defined:
  → Only PI is stored in memory while the PS is cleared (all PS data is registered as "blank").
- Only PS is defined:
  → Both PI and PS are cleared (all PI and PS data is registered as "blank").

(2) In case of auto memory

- Auto memory is performed with the main tuner.

Fast upward seek operation is performed, and when the stop conditions are satisfied, the unit waits for the sync output from the sync microcomputer for 500 ms and, if the received stations is not an RDS station, the unit enters upward seek again. If it is an RDS station, the unit waits for 20 seconds (it is not necessary to wait for 20 seconds when the data is defined within 20 seconds), then stores the defined PI and PS data in memory, then the unit enters upward seek again. (Conditions for memorizing the PI and PS data are the same as in the manual memory). And at the same time while storing in memory, the PS data is indicated for 1 second.

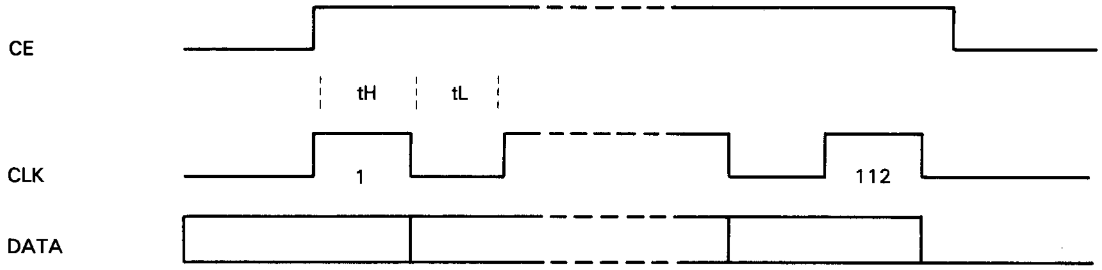
CIRCUIT DESCRIPTION

Relationship between RDS ON/OFF and TI ON/OFF

RDS	TI	Operation format
OFF	OFF	Reception continues regardless whether or not the RDS station is being received. Traffic information interruption by TA will not be done.
OFF	ON	Regardless of the reception of RDS station, the AF/PI search will not be performed. In this mode, although the functions concerning RDS are PS display and CT data only, all the RDS data received are stored in memory. When the received station is not the TP station or becomes non-TP station, the TP search is activated after 5 seconds. (Search operation starts 5 seconds after SK or TP turns off when the received traffic information signal is SK or TP data only, but when sync is unlocked, since TP-off is be defined after 5 seconds, the TP search will start 10 seconds later, in total.)
ON	OFF	AF search is performed only when the RDS station is received. Therefore, the last channel is always changed to the best-reception station. When the sync is unlocked during AF search and an alternative station cannot be found after 2 cycles of AF list, the unit enters the PI search operation. (This happens only when sync unlock condition continues during 2-cycle searching.) PI search operation is continued repeatedly (endlessly) until tuning operation is performed or the RDS is turned OFF.
ON	ON	In this mode, the condition to keep receiving the traffic information station (TP station) is prior to the condition to receive an RDS station. Therefore, when the received station is not the TP station or becomes non-TP station, AF search is interrupted to enter the TP search operation. Conditions for TP search are the same as those of "RDS OFF, TI ON". Since the TP station detected by the TP search has no relationship between the PI code of the station received before starting TP search, if searching stops at the station with SK-only code, the AF search will not be performed. Also for the PI search, in the same way as above, sicne the TP search starts because of unlocked sync, the AF search will not be performed. (If the received station has both TP and SK data, although sync is unlocked before SK-off, search operation never start as long as SK is on.)

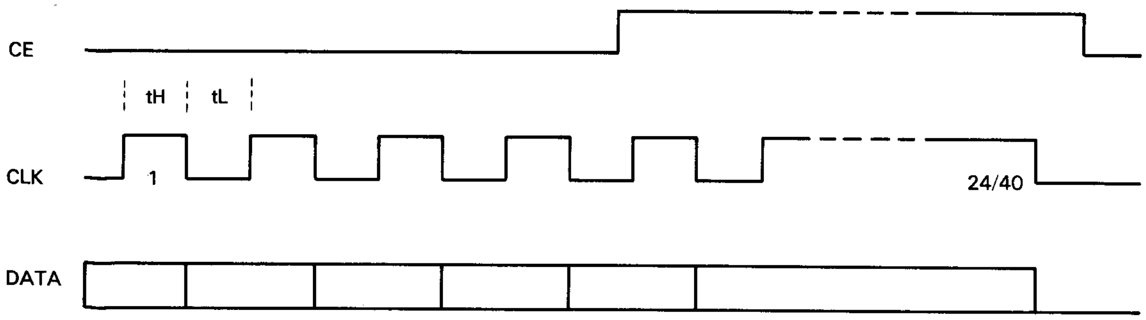
Serial Data Transfer Timing Chart

(1) LC7582 (LCD DRIVER IC)



tH = tL = 2 µs. f = 250 kHz

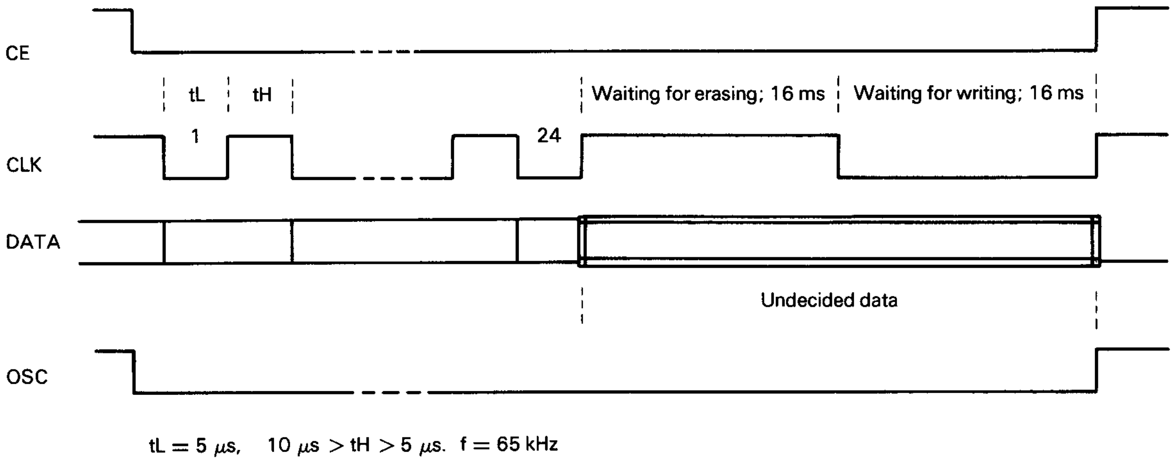
(2) LC7218 (PLL IC)



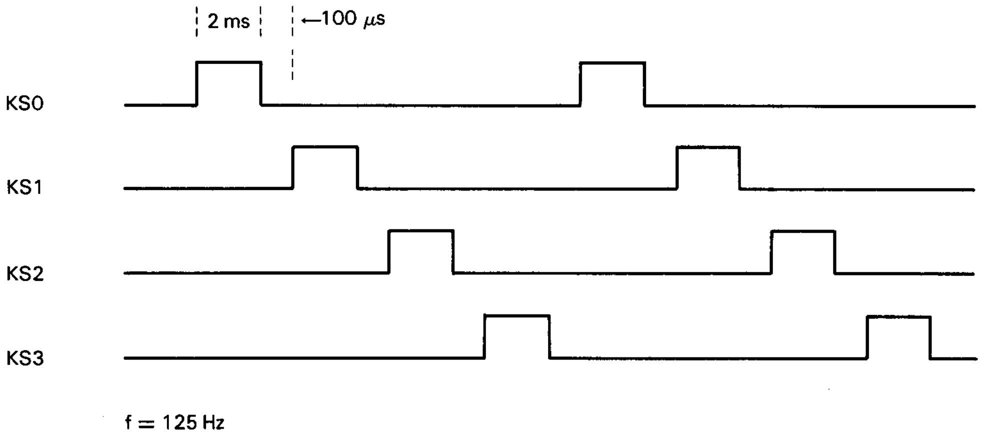
tH = 2 µs, 10 µs > tL > 2 µs. f = 80 kHz

CIRCUIT DESCRIPTION

(3) CXK1013P (EEPROM IC)


CE
tL
tH
Waiting for erasing; 16 ms
Waiting for writing; 16 ms
1
24
CLK
DATA
Undecided data
OSC
tL = 5 μs, 10 μs > tH > 5 μs. f = 65 kHz

(4) DYNAMIC KEY SCAN TIMING


2 ms
←100 μs
KS0
KS1
KS2
KS3
f = 125 Hz

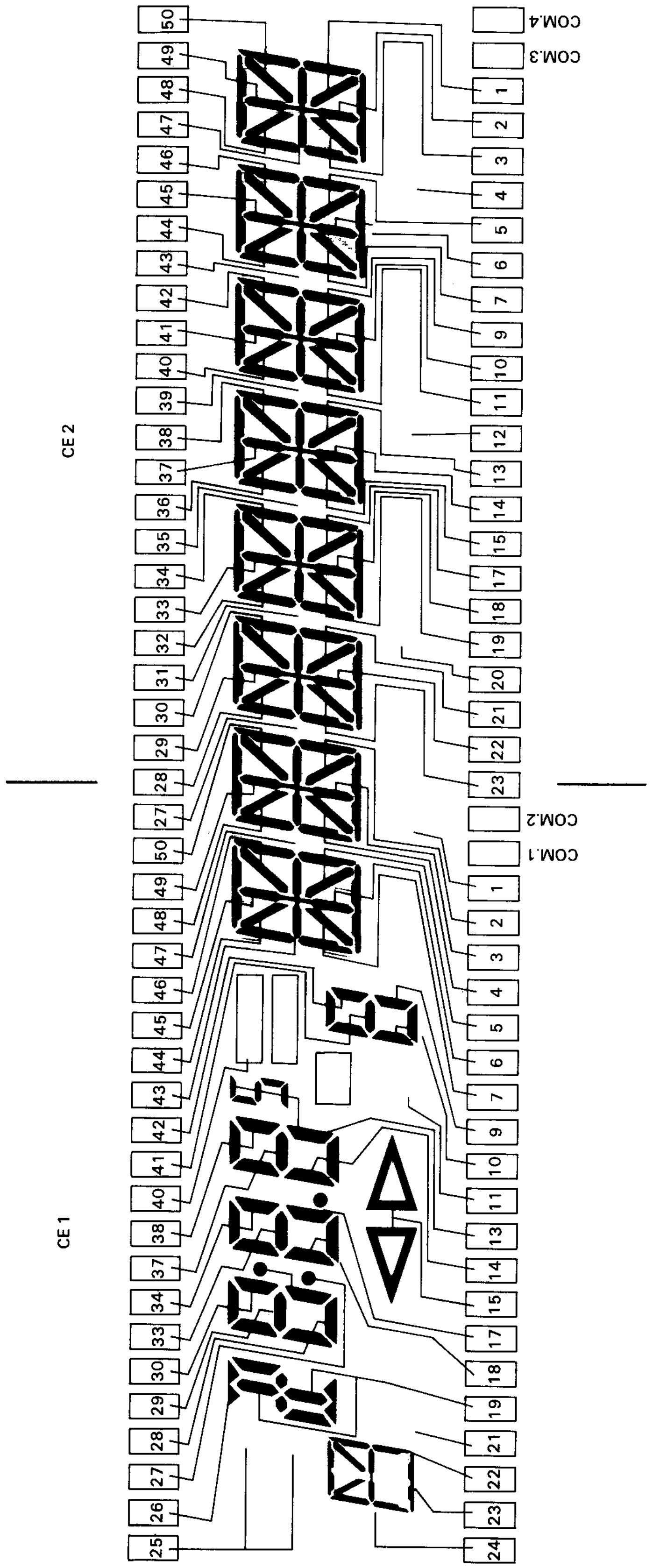
DATA NO.	SEGMENT NAME	COM1	COM2
S1	8th digit from the right, 14-segment n	○	
S1	c		○
S2	p	○	
S2	d		○
S3	r	○	
S3	e		○
S4	BL・S	○	
S4	REPEAT		○
S5	7th digit from the right, 14-segment n	○	
S5	c		○
S6	p	○	
S6	d		○
S7	r	○	
S7	e		○
S8		○	
S8			○
S9	6th digit from the right, 14-segment n	○	
S9	c		○
S10	p	○	
S10	d		○
S11	r	○	
S11	e		○
S12	DOLBY C	○	
S12	DOLBY B		○
S13	5th digit from the right, 14-segment n	○	
S13	c		○
S14	p	○	
S14	d		○
S15	r	○	
S15	e		○
S16		○	
S16			○
S17	4th digit from the right, 14-segment n	○	
S17	c		○
S18	p	○	
S18	d		○
S19	r	○	
S19	e		○
S20	T-CALL	○	
S20	METAL		○
S21	3rd digit from the right, 14-segment n	○	
S21	c		○
S22	p	○	
S22	d		○
S23	r	○	
S23	e		○
S24		○	
S24			○
S25		○	
S25			○
S26		○	
S26			○

DATA NO.	SEGMENT NAME	COM1	COM2
S27	3rd digit from the right, 14-segment m	○	
S27	g		○
S28	h	○	
S28	f		○
S29	j	○	
S29	a		○
S30	k	○	
S30	b		○
S31	4th digit from the right, 14-segment m	○	
S31	g		○
S32	h	○	
S32	f		○
S33	j	○	
S33	a		○
S34	k	○	
S34	b		○
S35	5th digit from the right, 14-segment m	○	
S35	g		○
S36	h	○	
S36	f		○
S37	j	○	
S37	a		○
S38	k	○	
S38	b		○
S39	6th digit from the right, 14-segment m	○	
S39	g		○
S40	h	○	
S40	f		○
S41	j	○	
S41	a		○
S42	k	○	
S42	b		○
S43	7th digit from the right, 14-segment m	○	
S43	g		○
S44	h	○	
S44	f		○
S45	j	○	
S45	a		○
S46	k	○	
S46	b		○
S47	8th digit from the right, 14-segment m	○	
S47	g		○
S48	h	○	
S48	f		○
S49	j	○	
S49	a		○
S50	k	○	
S50	b		○
S51		○	
S51			○
S52		○	
S52			○

DATA NO.	SEGMENT NAME	COM1	COM2
S1	LNSS	○	
S1	TI		○
S2	2nd digit, 14-segment n	○	
S2	c		○
S3	p	○	
S3	d		○
S4	r	○	
S4	e		○
S5	Rightmost digit, 14-segment n	○	
S5	c		○
S6	p	○	
S6	d		○
S7	r	○	
S7	e		○
S8		○	
S8			○
S9	ADV	○	
S9	Channel 7 Segment c		○
S10	e	○	
S10	d		○
S11	RDS	○	
S11	Loudness		○
S12		○	
S12			○
S13	50 kHz	○	
S13	7-segment, digit for 1 kHz c		○
S14	e	○	
S14	d		○
S15		○	
S15			○
S16		○	
S16			○
S17	Common "." for FM band	○	
S17	7-segment, digit for 10 kHz c		○
S18	e	○	
S18	d		○
S19	7-segment, "1" for 1000 kHz	○	
S19	STEREO		○
S20		○	
S20			○
S21	"II" for FM band	○	
S21	"I"		○
S22	Band display, 6-segment b	○	
S22	f		○
S23	e	○	
S23	c		○
S24	a	○	
S24	d		○
S25	TA	○	
S25	TP		○
S26	7-segment, " " for 1000 kHz	○	
S26	"-" for Tape display		○

DATA NO.	SEGMENT NAME	COM1	COM2
S27	":" for clock display	○	
S27	7-segment, digit for 100 kHz c		○
S28	e	○	
S28	d		○
S29	7-segment, digit for 100 kHz g	○	
S29	f		○
S30	b	○	
S30	a		○
S31		○	
S31			○
S32		○	
S32			○
S33	7-segment, digit for 10 kHz g	○	
S33	f		○
S34	b	○	
S34	a		○
S35		○	
S35			○
S36		○	
S36			○
S37	7-segment, digit for 1 kHz g	○	
S37	f		○
S38	b	○	
S38	a		○
S39		○	
S39			○
S40	Local	○	
S40	Auto		○
S41	Channel 7 Segment g	○	
S41	f		○
S42	b	○	
S42	a		○
S43	Rightmost digit, 14-segment m	○	
S43	g		○
S44	h	○	
S44	f		○
S45	j	○	
S45	a		○
S46	k	○	
S46	b		○
S47	2nd digit from the right, 14-segment m	○	
S47	g		○
S48	h	○	
S48	f		○
S49	j	○	
S49	a		○
S50	k	○	
S50	b		○
S51		○	
S51			○
S52		○	
S52			○

Segment



Sync Microcomputer (LC6543H)

Sync microcomputer synchronizes the RDS data output from LA2230 and outpus the resulted data in the format described below.

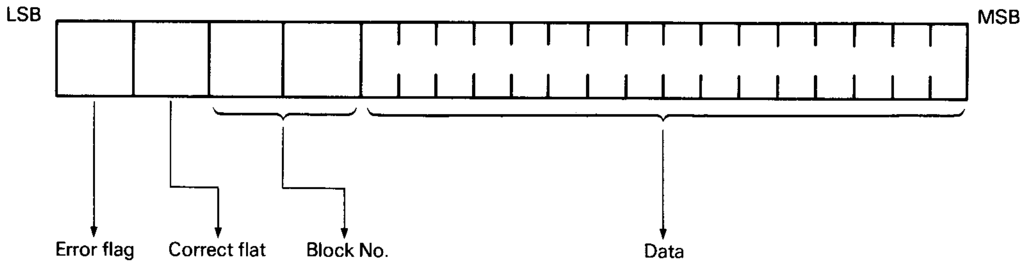
Either of the main sync or sub sync can be selected to be output from the main pin. By this, the most effective RDS data input method will be obtained with the twin-tuner receiver. In this model, only the main sync is used.

(1) Main sync microcomputer format:
When the main sync microcomputer is selected by inverting the main pin to high, after detecting the sync, the data included in each clock is output according to the format.

(2) Sub sync microcomputer format:
When the sub sync microcomputer is selected by inverting the main pin to low, the PI code and TP/TA data defined by the rising edge of REQ pin are transmitted according to the format.

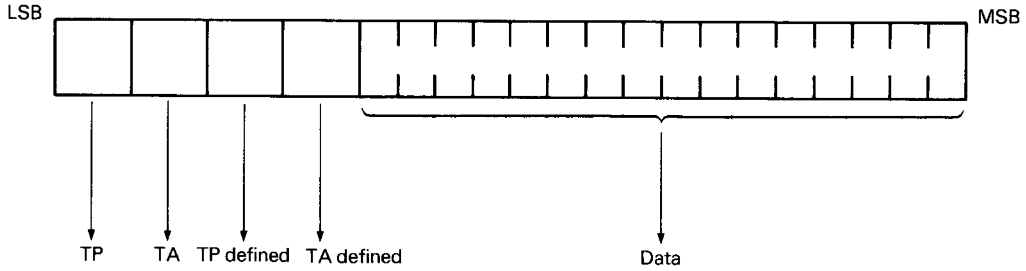
Sync Microcomputer Format

(1) Main sync microcomputer



0	0	1
0	1	2
1	0	3
1	1	4

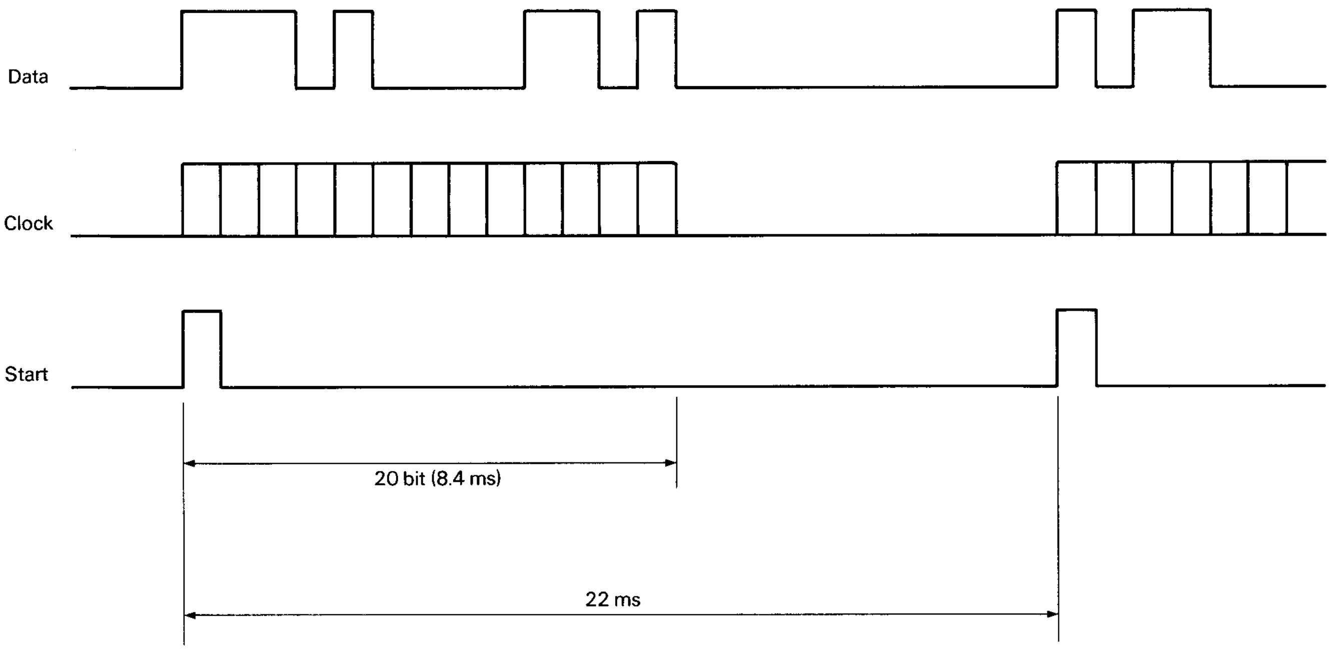
(2) Sub sync microcomputer

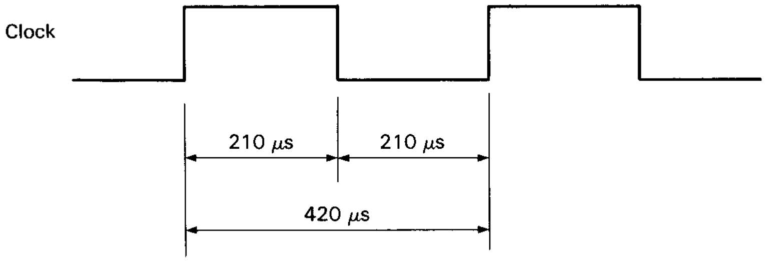


- PI data will be undefined by transmitting "0" for all 16 bits.

CIRCUIT DESCRIPTION

Sync Microcomputer Timing Chart


Data
Clock
Start
20 bit (8.4 ms)
22 ms

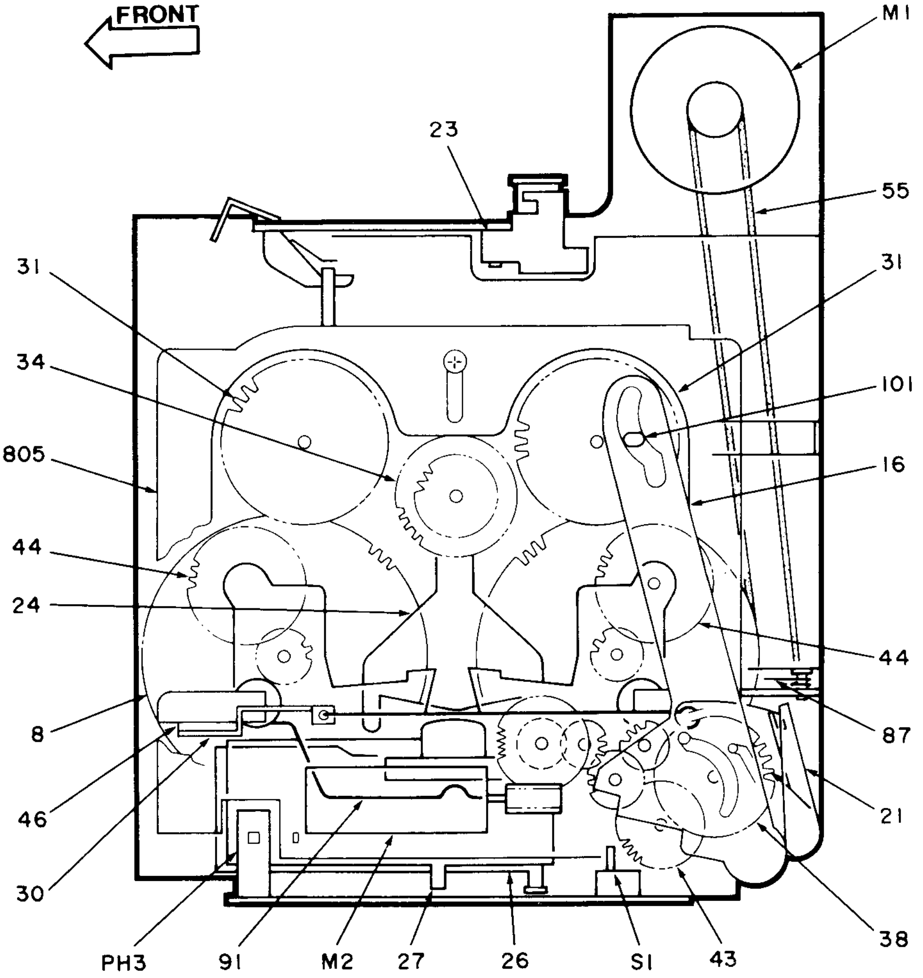

Clock
210 μs
210 μs
420 μs

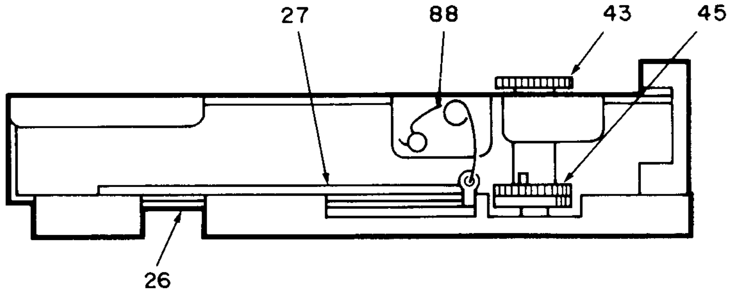
CIRCUIT DESCRIPTION

Pin Description

Pin No.	Pin Name	I/O	Name	Description
1	PE_3	O	IN CORECT	Internal correction mode select. Low internally.
2	V_{DD}		V_{DD}	Power supply pin
3	PF0	I	ERORR OUT	Outputs even error data
4	PF_1	I	Sync unlock	Error-only sync unlock select pin. Low for error only.
5	PF_2	I	DATA IN	RDS data input
6	PF_3	I	CLOCK IN	RDS clock input (interruption). Inverting to low.
7	PG0	I	MAIN	Main, sub switch-over
8	PG_1	I	REQUEST	Data request pin
9	PG_2	I	CE	CE input pin for PLL
10	PG_3	O	TA	Static TA output pin (Outputs TA data in sub mode)
11	PA0	O	DATA START	Data start pin
12	PA_1	O	CLOCK OUT	Clock out pin
13	PA_2	O	DATA OUT	Data out pin
14	PA_3	O	RCV	Group sync complete output
15	OSC2	O	OSC2	Oscillator circuit (40 MHz)
16	OSC1	I	OSC1	Oscillator circuit (40 MHz)
17	TEST	I	TEST	To GND
18	Vss		Vss	Vss pin
19	RES	I	RES	Reset pin
20	PC0	O	RCV(BLOCK1)	Block sync continue pin for BLOCK 1
21	PC_1	O	RCV(BLOCK2)	Block sync continue pin for BLOCK 2
22	PC_2	O	CORECT	Error correction possible output
23	PC_3	O	ERORR	Correction impossible output
24	PD0	I	Correct bit length	Correction ability variable pin
25	PD_1	I	Correct bit length	Correction ability variable pin
26	PD_2	I	Correct bit length	Correction ability variable pin
27	PD_3	I		Not used
28	PE0		ALL MODE	All mode select pin
29	PE_1		Not used	
30	PE_2		Not used	

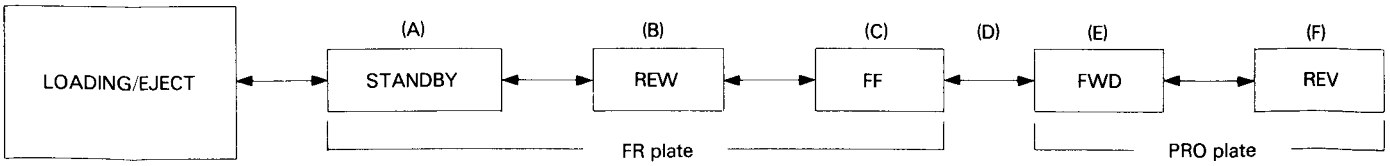
MECHANISM DESCRIPTION


FRONT
M1
23
55
31
31
34
101
805
16
44
24
44
8
87
46
21
30
38
PH3
91
M2
27
26
S1
43


27
88
43
45
26

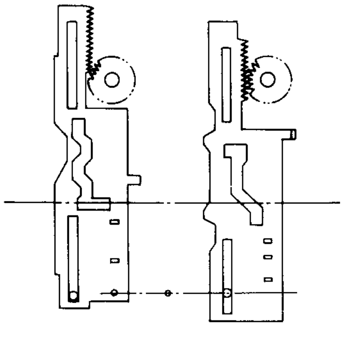
Mechanism operation modes

Each mode undergoes the following sequence:

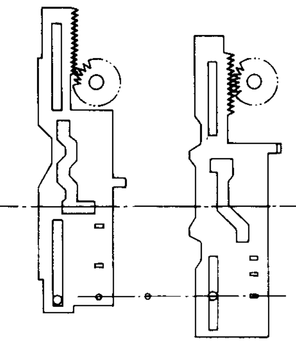

LOADING/EJECT
(A)
STANDBY
(B)
REW
(C)
FF
(D)
(E)
FWD
(F)
REV
FR plate
PRO plate

MECHANISM DESCRIPTION

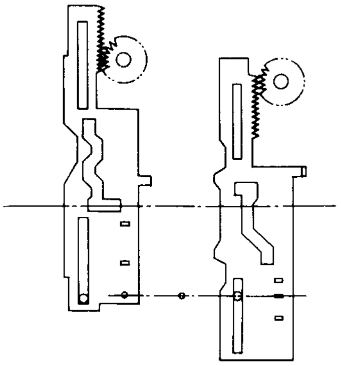
Each mode is determined by the positions of the FR and PRO plates.



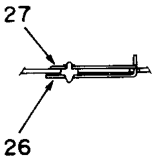
(A)

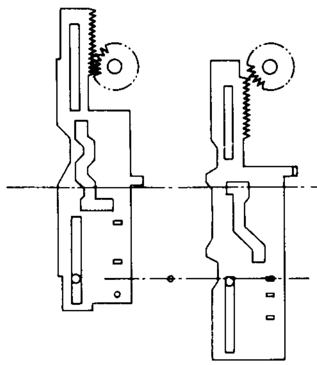


(B)

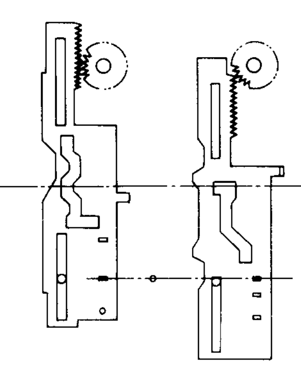


(C)

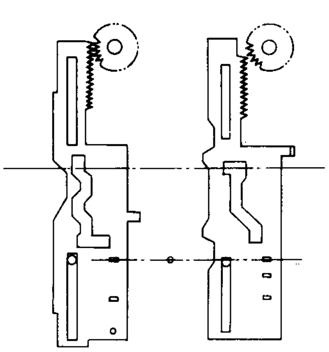




(D)



(E)

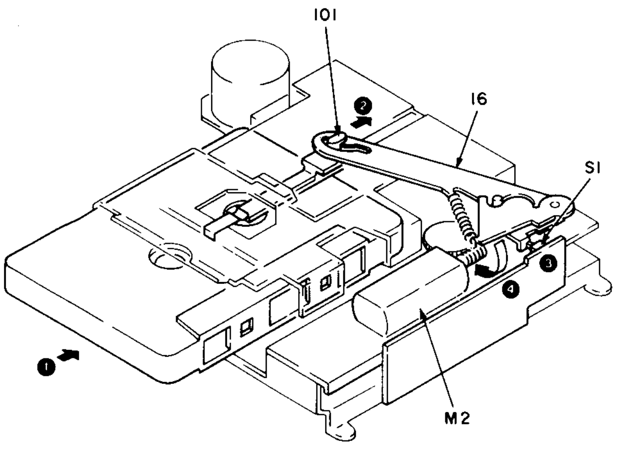


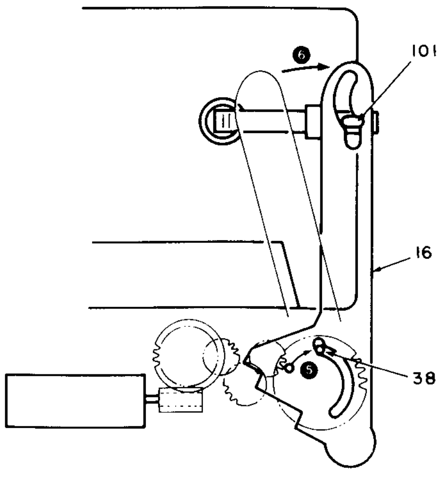
(F)

1. Loading

When the cassette tape is pushed in❶, the loading arm (16) moves via the pack slider (101) . . . ❷. Thus, the pack-in switch (S1) detects this . . . ❸. and the sub motor (M2) makes normal rotation . . . ❹.

The rotation of the sub motor (M2) causes the load gear (38) to rotate by way of the idle gear . . . ❺.
The load gear (38) provides the rotation of the loading arm (16) by its pin . . . ❻, to load in the cassette tape.

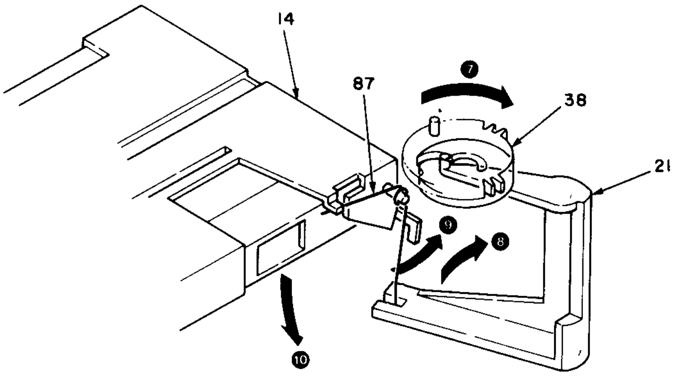




MECHANISM DESCRIPTION

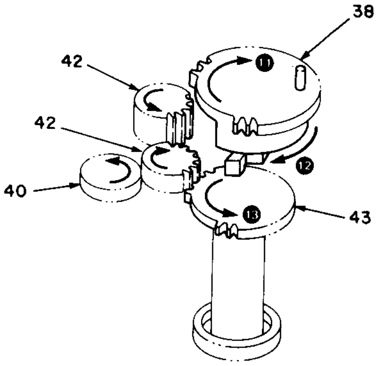
2. PACK DOWN

When the load gear (38) further rotates ⑦, the action arm (21) also rotates ⑧ to lower the action plate (14) ... ⑨, by way of the action plate spring (87) ... ⑩.



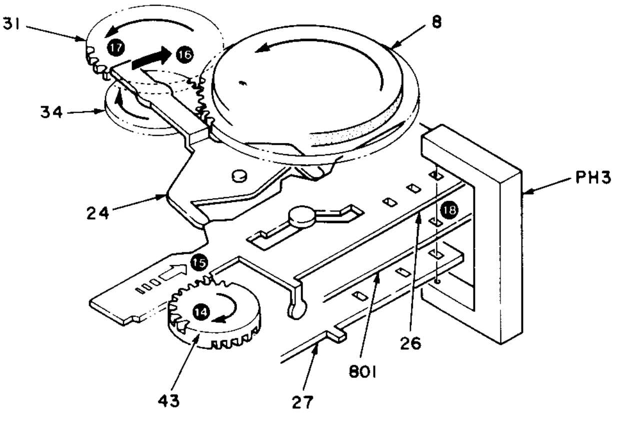
3. Change from load gear to mode gear

When the load gear (38) further more rotates ⑪ , the boss under it pushes against the boss of the mode gear (43) ... ⑫ , so that the mode gear (43) rotates after the shift of its non-toothed section ... ⑬ .
Thus, the load gear (38) stops rotation on account of its non-toothed section coming.

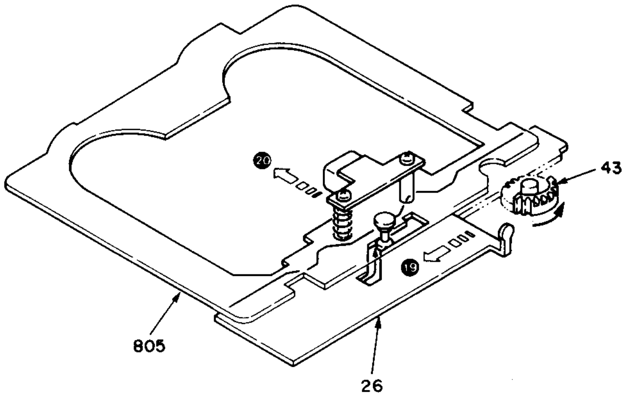


4. REW

When the mode gear (43) rotates ⑭ , the FR plate (26) under it moves ㉕ . The cam of the FR plate (26) works to rotate the FR arm (24) ... ⑯ .
Further, the FR arm (24) moves to transmit the rotation of the flywheel (8) to the reel gear (31) ... ⑰
At this time, a slot (REW hole) of the FR plate (26) is detected by the mode sensor (PH3) ... ⑱, to stop the rotation of the sub motor.



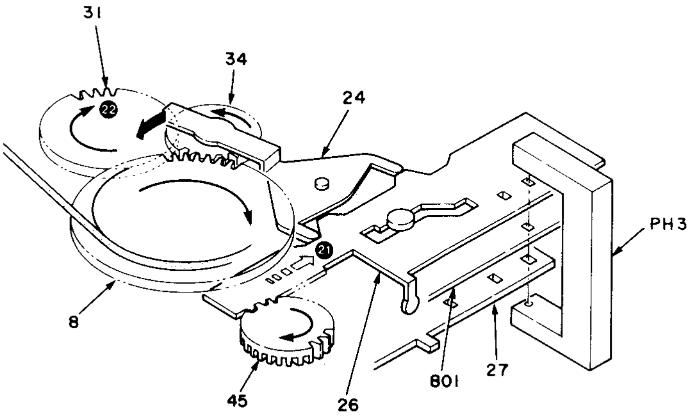
For REW or FF, due to the groove of the FR plate (26) ... ⑲, the head plate (805) advances ⑳ so that the head moves to a position at which T-ADV is feasible.



MECHANISM DESCRIPTION

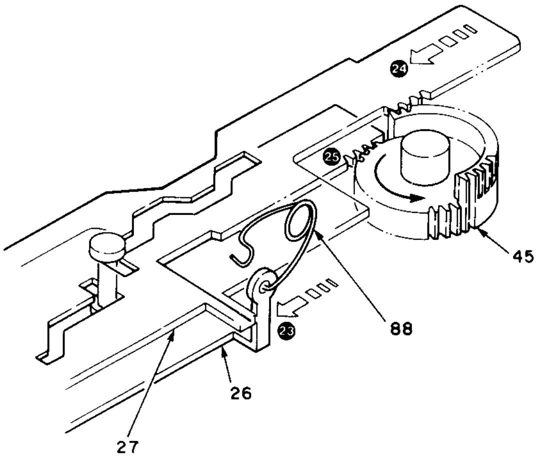
5. FF

When the sub motor further rotates, the cam of the FR plate (26) moves ㉑ so that the FR arm (24) is rotated in the reverse direction… ㉒. Thus, a slot (FF hole) of the FR plate (26) is detected by the mode sensor (PH3) to stop the rotation of the sub motor.



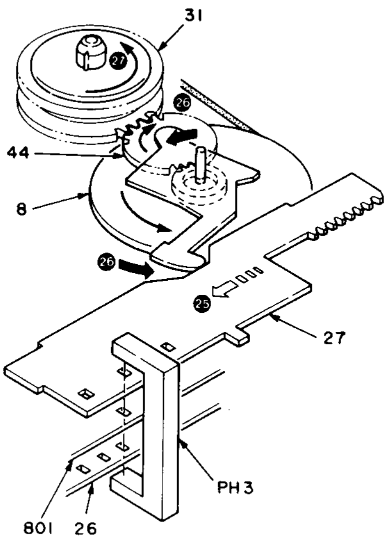
6. Change from FR plate to PRO plate

When the sub motor further more rotates, the knob of the FR plate (26) hits against the knob of the PRO plate (27)… ㉓, so that the PRO plate (27) moves.
Thus, the rack of the PRO plate (27) enters into engagement with the mode gear… ㉔. Then, the rack of the FR plate (26) is disengaged from the mode gear because of its non-toothed section coming… ㉕. The mode plate spring (88) assists in this operation.

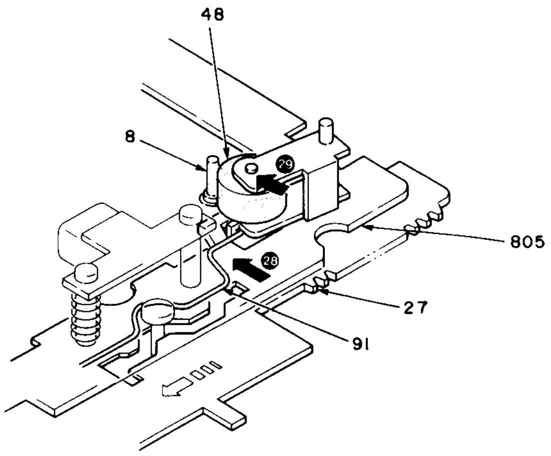


7. FWD PLAY

When the PRO plate (27) moves ㉕, the takeup plate F is rotated by the cam of the PRO plate (27) and the takeup gear (44) engages with the reel assy (31)… ㉖. The rotation of the flywheel (8) is transmitted to the reel assy (31) by way of the takeup gear (44)… ㉗. Thus, a slot (FWD hold) of the PRO plate (27) is detected by the mode sensor (PH3) to stop the rotation of the sub motor.



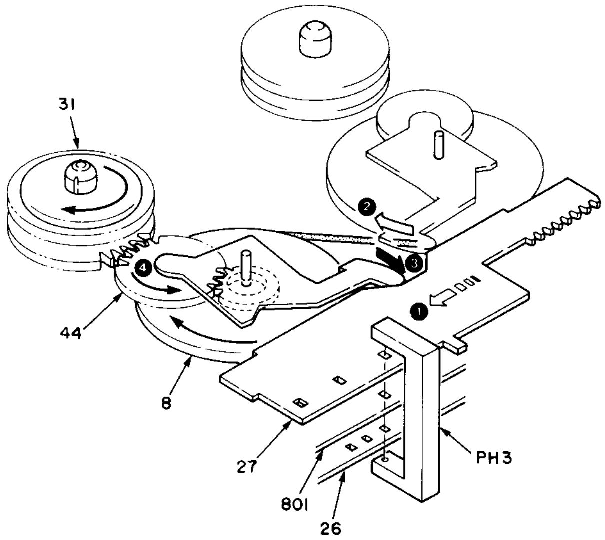
The groove of the PRO plate (27) serves to advance the head plate (805)… ㉘, to move the head and the pinch roller (48) to their FWD PLAY position. The pinch roller (48) is contacted to the capstan (8) by pressure due to the shift of the takeup plate and the force of the pinch roller spring… ㉙.



MECHANISM DESCRIPTION

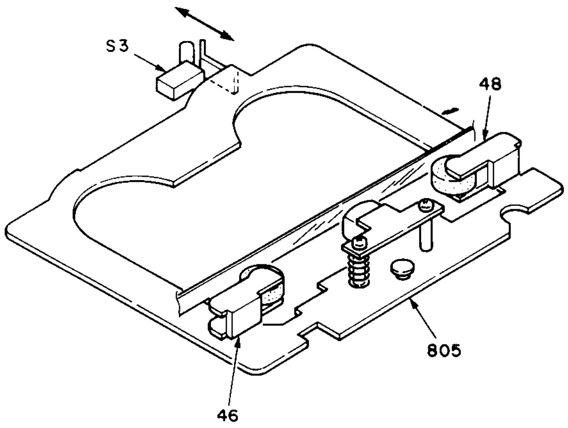
8. REV PLAY

When the PRO plate (27) further moves, the takeup plate F returns by the cam of the PRO plate (27) ... ㉛, and the takeup plate R rotates ㉜.
The rotation of the flywheel is transmitted to the reel assy (31) by way of the takeup gear (44) ... ㉝.
Thus, a slot (REV hole) of the PRO plate (27) is detected by the mode sensor (PH3) to stop the rotation of the sub motor.



9. STANDBY (PAUSE)

From a given mode, when the head plate (805) regresses due to the reverse rotation of the sub motor rotates, when the pause switches (S3) acts ("L" to "H") to stop the rotation of the sub motor, the pause mode is entered.

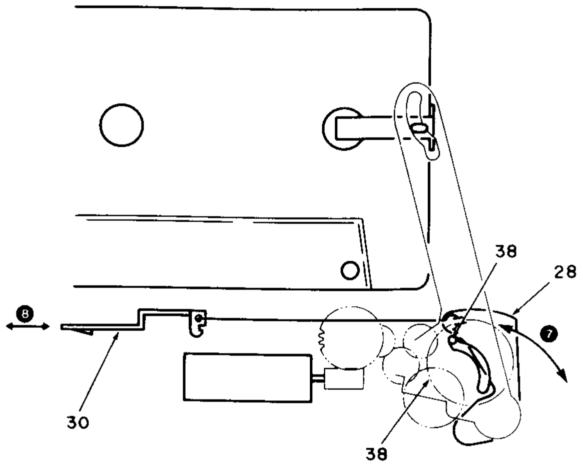


10. EJECT

When the sub motor is reversely rotated, an operation reverse to the loading operation is performed to eject the cassette tape.

11. SHUTTER DOOR

For loading or eject, the door arm (28) is actuated by the pin of the load gear (38). The door arm (28) moves the door lever (30) forwards or backwards to open or close the cassette lid.

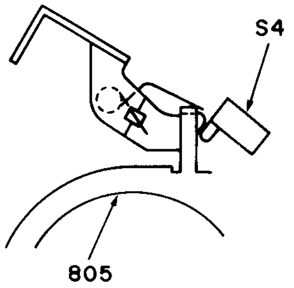


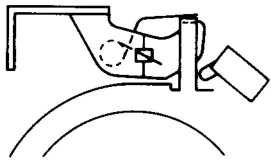
12. AUTO REVERSE

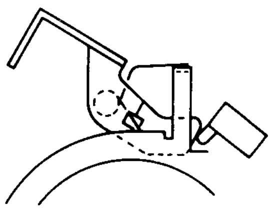
The tape end is detected by the sensor which senses the reel rotation.

13. AUTO METAL

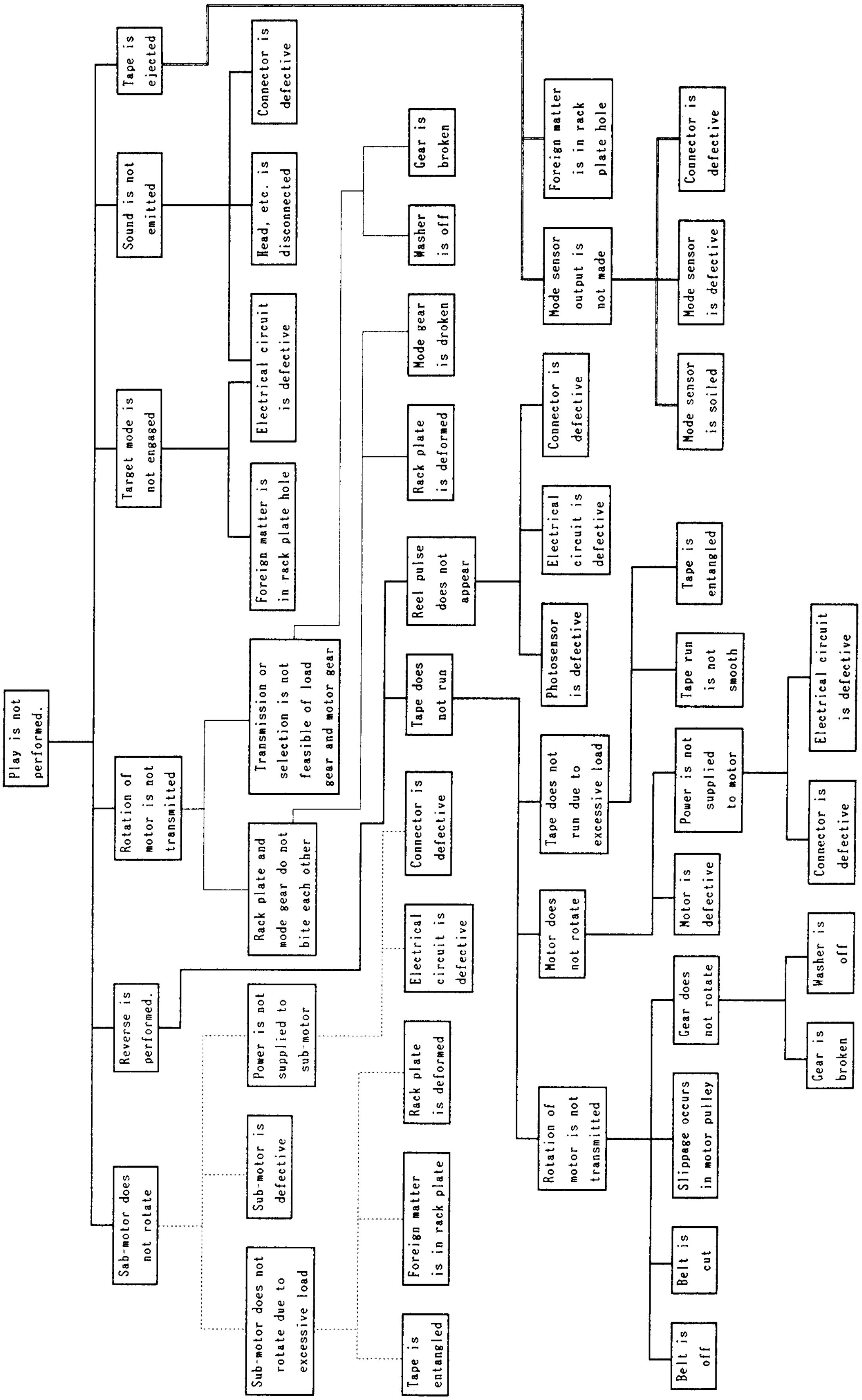
The auto metal switch (S4) detects the high position hole of the cassette tape when the head plate (805) is advancing.



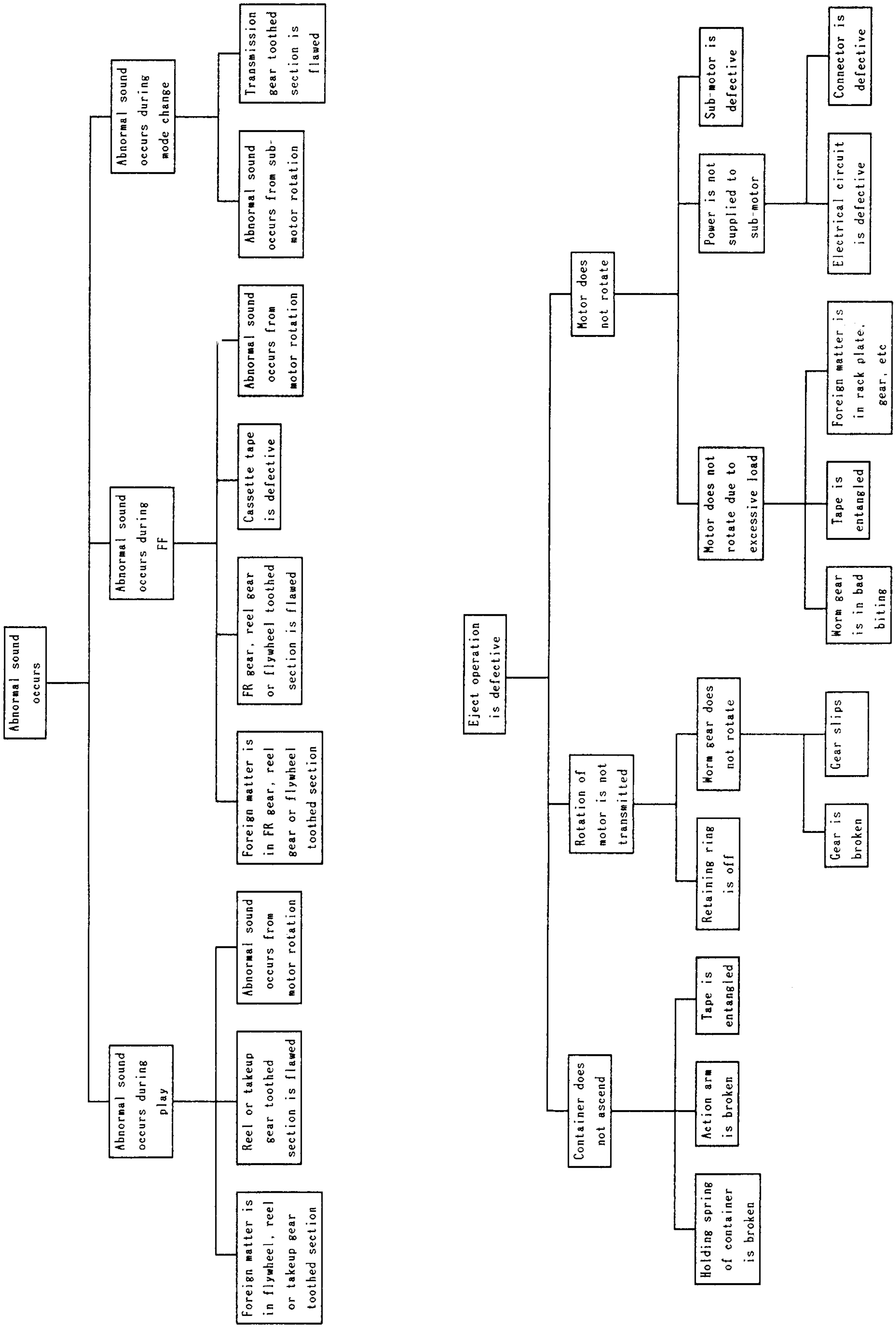




TROUBLE SHOOTING


Play is not performed.
Tape is ejected
Sound is not emitted
Target mode is not engaged
Rotation of motor is not transmitted
Reverse is performed.
Sab-motor does not rotate
Connector is defective
Head, etc. is disconnected
Electrical circuit is defective
Foreign matter is in rack plate hole
Transmission or selection is not feasible of load gear and motor gear
Rack plate and mode gear do not bite each other
Power is not supplied to sub-motor
Sub-motor is defective
Sub-motor does not rotate due to excessive load
Gear is broken
Washer is off
Mode gear is droken
Rack plate is deformed
Reel pulse does not appear
Tape does not run
Connector is defective
Electrical circuit is defective
Rack plate is deformed
Foreign matter is in rack plate
Tape is entangled
Foreign matter is in rack plate hole
Mode sensor output is not made
Connector is defective
Mode sensor is defective
Mode sensor is soiled
Connector is defective
Electrical circuit is defective
Photosensor is defective
Tape does not run due to excessive load
Motor does not rotate
Rotation of motor is not transmitted
Tape is entangled
Tape run is not smooth
Power is not supplied to motor
Motor is defective
Electrical circuit is defective
Connector is defective
Gear does not rotate
Slippage occurs in motor pulley
Belt is cut
Belt is off
Washer is off
Gear is broken

TROUBLE SHOOTING


Abnormal sound occurs
Abnormal sound occurs during mode change
Transmission gear toothed section is flawed
Abnormal sound occurs from sub-motor rotation
Abnormal sound occurs during FF
Abnormal sound occurs from motor rotation
Cassette tape is defective
FR gear, reel gear or flywheel toothed section is flawed
Foreign matter is in FR gear, reel gear or flywheel toothed section
Abnormal sound occurs during play
Abnormal sound occurs from motor rotation
Reel or takeup gear toothed section is flawed
Foreign matter is in flywheel, reel or takeup gear toothed section
Eject operation is defective
Motor does not rotate
Sub-motor is defective
Power is not supplied to sub-motor
Connector is defective
Electrical circuit is defective
Motor does not rotate due to excessive load
Foreign matter is in rack plate, gear, etc
Tape is entangled
Worm gear is in bad biting
Rotation of motor is not transmitted
Worm gear does not rotate
Gear slips
Gear is broken
Retaining ring is off
Container does not ascend
Tape is entangled
Action arm is broken
Holding spring of container is broken

ADJUSTMENT

Set the controls and switches as follows.

BALANCE :center position　LOUD :OFF　LOCAL :OFF
FADER :center position　T · ADV :OFF　AUTO :OFF
BASS :center position　METAL :OFF
TREBLE :center position　DOLBY NR :OFF

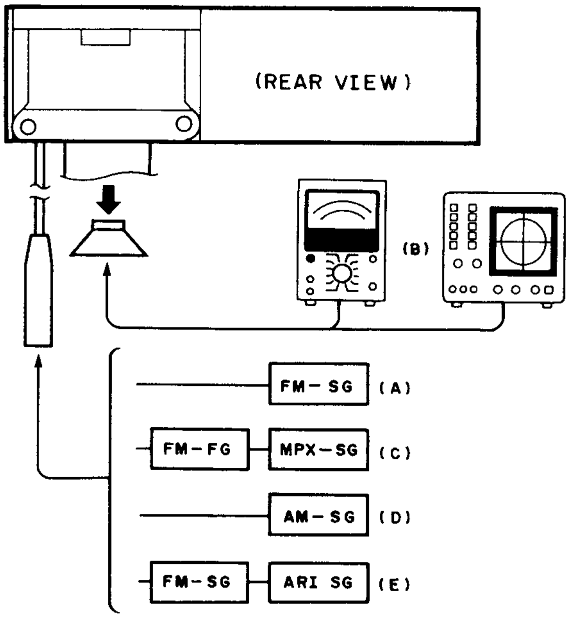
No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER(RECEIVER) SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION							
1	DISCRIMINATOR	(A) 98.1MHz 1kHz,±40kHz dev 60dBµ(ANT input)	Connect a DC voltmeter between two terminals of TP1. Connect the distortion meter to the PRE OUT terminals.	FM 98.1MHz	T1 T2 (X89-A/3)	Adjust T1 to set the voltage between two terminals of TP1 is 0 volt and then adjust T2 so that the distortion of PRE OUT is minimum. Repeat the above procedure twice or more.	(a)
2	VCO	(A) 98.1MHz 0 dev 60dBµ(ANT input)	Connect the right-hand terminal of TP21 (With the front panel facing toward you)to the ground with 180kΩ resistor, and connect the frequency counter to the left-hand terminal.	FM 98.1MHz	VR3 (X14-A/4)	19,000Hz	(b)
3	SEPARATION	(C) 98.1MHz 1kHz,±40kHz dev Pilot:±6kHz dev Selector:L or R 60dBµ(ANT input)	(B)	FM 98.1MHz	VR2 (X14-A/4)	Adjust it so that the crosstalk from L to R and R to L become minimum.	
4	ANRC	(C) 98.1MHz 1kHz,±40kHz dev Pilot:±6kHz dev Selector:L or R 35dBµ(ANT input)	(B)	FM 98.1MHz	VR1 (X89-A/3)	Separation 10dB	
5	SOFT MUTE LEVEL	(A) 98.1MHz 1kHz,±40kHz dev 60dBµ→No input	(B)	FM 98.1MHz	VR2 (X89-A/3)	Output Noise level -25dBµ (When the 1kHz output when the input signal level is 60dBµ.)	
6	SD1	(A) 98.1MHz 1kHz,±40kHz dev 20dBµ(ANT input)	Test Mode (While pressing the preset keys (1) and (4) at the same time, press the RESET to ON or the POWER ON.)	FM 98.1MHz	VR5 (X89-A/3)	Rotate VR5 clockwise and stop at the point where the Dolby B indicator lights in the LCD display.	(c)
7	SD2	(A) 98.1MHz 1kHz,±40kHz dev 30dBµ(ANT input)	Test Mode (ditto)	FM 98.1MHz	VR4 (X89-A/3)	Rotate VR4 clockwise and stop at the point where the Dolby C indicator lights in the LCD display.	
8	SD3	(A) 98.1MHz 1kHz,±40kHz dev 40dBµ(ANT input)	Test Mode (ditto)	FM 98.1MHz	VR3 (X89-A/3)	Rotate VR3 clockwise and stop at the point where the REP indecator lights in the LCD display.	
9	DK LEVEL	(E) 98.1MHz 0 mod SK 5.33% DK 30%, BK 60% 60dBµ(ANT input)	Connect the AC voltmeter to TP18 on the X14-A/4 board.	FM 98.1MHz TI:OFF	VR5 L4 (X14-A/4)	Maximum (125Hz)	(d)

KRC-951RDS

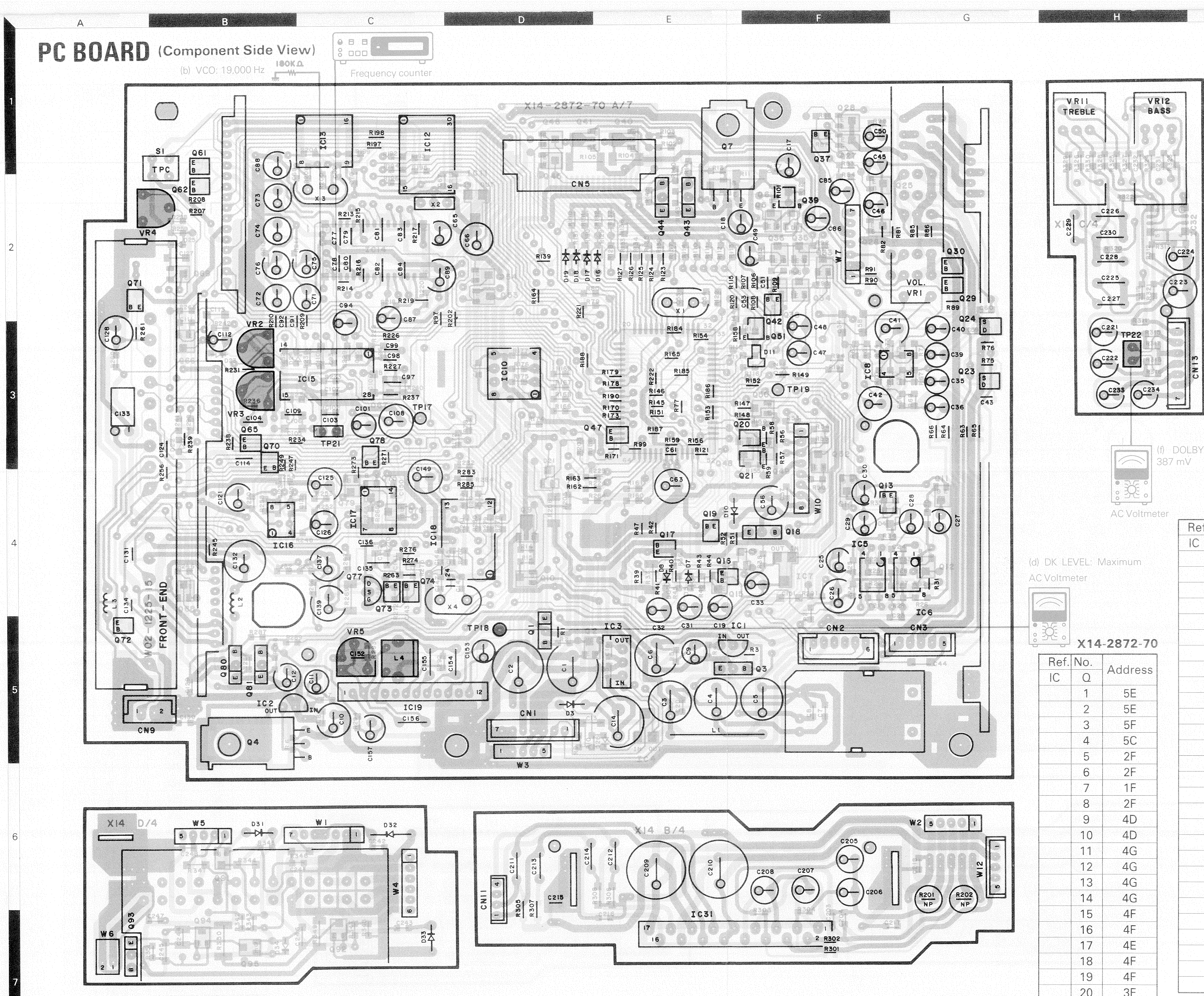
ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER(RECEIVER) SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
10	RDS B.P.F.	(E) 98.1MHz 0 mod SK 5.33%	Connect the AC voltmeter to TP2 on the X89-A/3 board.	FM 98.1MHz TI:OFF	L3~6 (X89-A/3)	Maximum (57kHz)	
AM SECTION							
(1)	SD AM	(D) 999kHz 400Hz 30% 35dBμ	Test Mode (While pressing the preset keys (1) and (4) at the same time, press the RESET to ON or the POWER ON.)	MW 999kHz	VR4 (X14-A4)	Adjust VR4 so that the Dolby B indicator lights in the LCD display.	
CASSETTE DECK SECTION							
[1]	AZIMUTH	MTT-114 10kHz	(B)	TAPE PLAY	Head Azimuth Screw	Adjust the azimuth for each L CH/R CH or FWD/RVS becomes maximum.	(e)
[2]	DOLBY LEVEL	MTT-150	Connect the AC voltmeter to TP22 on the X14-C/4 board.	TAPE PLAY	VR7(L) VR8(R)	387mV	(f)

KRC-951RDS(K)(E)



PC BOARD (Component Side View)

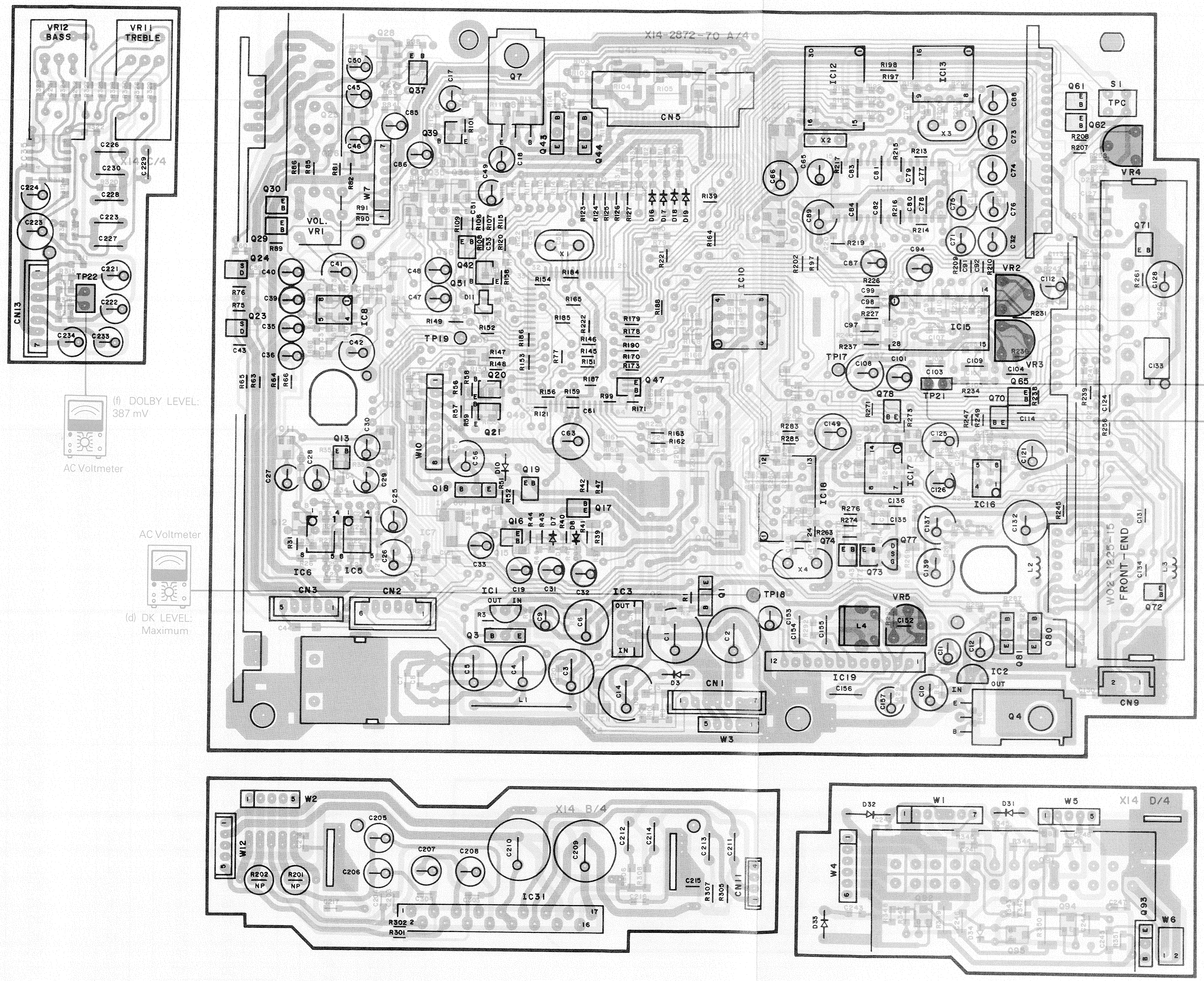

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
(b) VCO: 19,000 Hz
180kΩ
Frequency counter
X14-2872-70 A/7
VR11 TREBLE
VR12 BASS
X14 C/4
TP22
CN13
(f) DOLBY LEVEL: 387 mV
AC Voltmeter
(d) DK LEVEL: Maximum
AC Voltmeter
VOL. VR1
VR2
VR3
VR4
VR5
S1
TPC
CN5
CN1
CN2
CN3
CN9
IC1
IC2
IC3
IC5
IC6
IC8
IC10
IC12
IC13
IC15
IC16
IC17
IC18
IC19
X1
X2
X3
X4
TP17
TP18
TP19
TP21
W02-1225-15
FRONT-END
L1
L2
L3
L4
W3
W7
W10
X14 D/4
W5
W1
W4
W6
D31
D32
D33
Q93
Q94
Q95
X14 B/4
W2
W12
CN11
IC31
C209
C210
R201 NP
R202 NP

Refer to the schematic diagram for the values of resistors and capacitors.

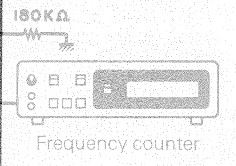
X14-2872-70

Ref.	No.	Address
IC	Q	
	1	5E
	2	5E
	3	5F
	4	5C
	5	2F
	6	2F
	7	1F
	8	2F
	9	4D
	10	4D
	11	4G
	12	4G
	13	4G
	14	4G
	15	4F
	16	4F
	17	4E
	18	4F
	19	4F
	20	3F
	21	3F
	22	
	23	3H
	24	2H
	25	1G
	26	2G
	27	1G
	28	1G
	29	2G
	30	2G
	31	
	32	
	33	2F
	34	2F
	35	2F
	36	2F
	37	1F
	38	2F
	39	2F
	40	1E
	41	1E
	42	2F
	43	2F
	44	2E
	45	1E
	46	1E
	47	3E
	48	3F
	49	3F
	50	3F
	51	2F
	52	3F
	53	2D
	54	2D
	55	
	56	
	57	
	58	
	59	
	60	
	61	1B
	62	2B
	63	
	64	
	65	3C
	66	3B
	67	3D
	68	4B
	69	2B
	70	3C
	71	
	72	5B
	73	4D
	74	4D
	75	4D
	76	4D
	77	4C
	78	3C
	79	
	80	5C
	81	5C
	91	6B
	92	7C
	93	6B
	94	7B
	95	7B
1		5F
2		5C
3		5E
4		5E
5		4G
6		4G
7		4F
8		3G
9		3E
10		3D
11		2D
12		1D
13		1C
14		2C
15		3C
16		4C
17		4C
18		4D
19		5D
31		7F
32		

PC BOARD (Foil Side View)



K
L
M
N
O
P
Q
R
S
T
1
2
3
4
5
6
7
VR12 BASS
VR11 TREBLE
X14 C/4
CN13
TP22
X14-2872-70 A/4
VOL. VR1
CN5
IC10
IC12
IC13
IC15
IC16
IC17
IC18
IC19
IC5
IC6
IC8
IC1
IC2
IC3
CN1
CN2
CN3
CN9
W3
TP17
TP18
TP19
TP21
VR2
VR3
VR4
VR5
TPC
S1
W02-1225-15 FRONT-END
(f) DOLBY LEVEL: 387 mV
AC Voltmeter
AC Voltmeter
(d) DK LEVEL: Maximum
X14 B/4
IC31
W2
W12
CN11
X14 D/4
W1
W4
W5
W6
D31
D32
D33



(b) VCO: 19,000 Hz
180KΩ
Frequency counter

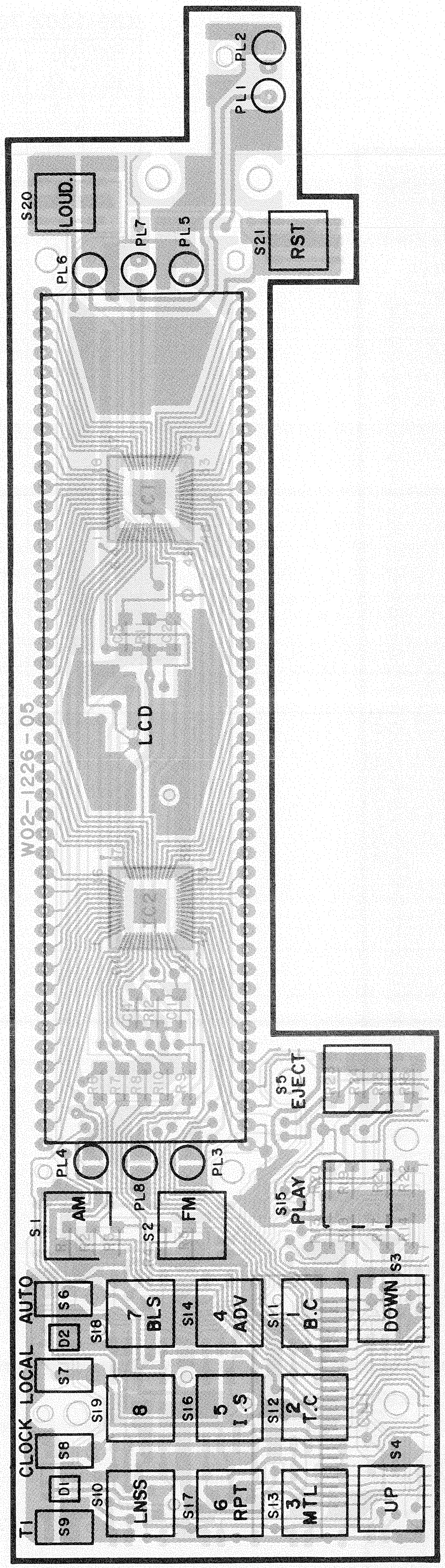
Refer to the schematic diagram for the values of resistors and capacitors.

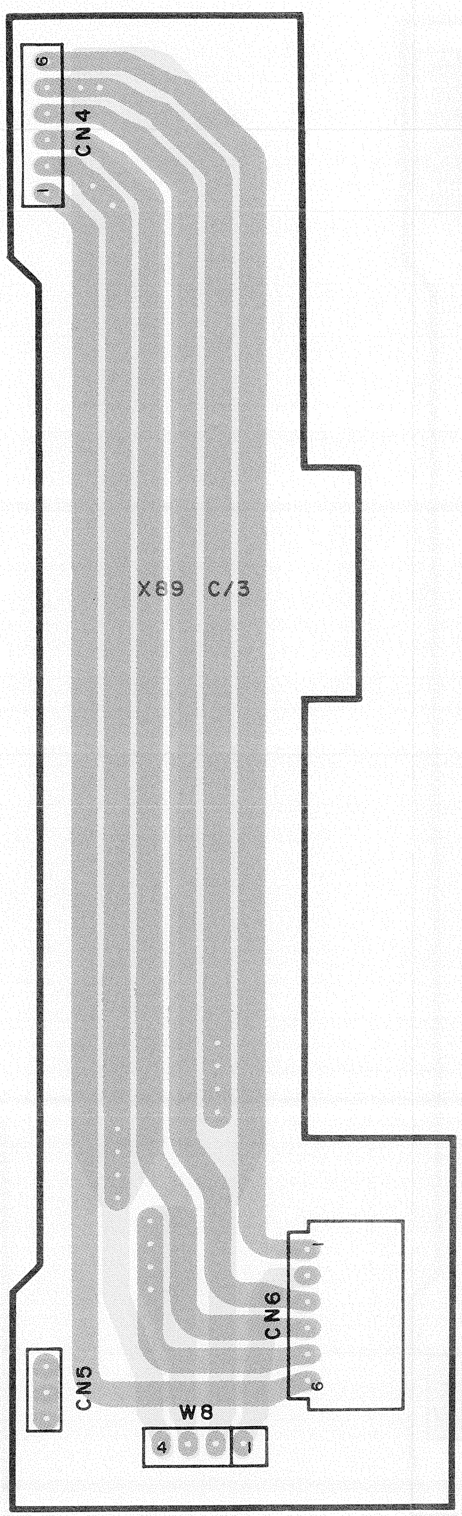
X14-2872-70

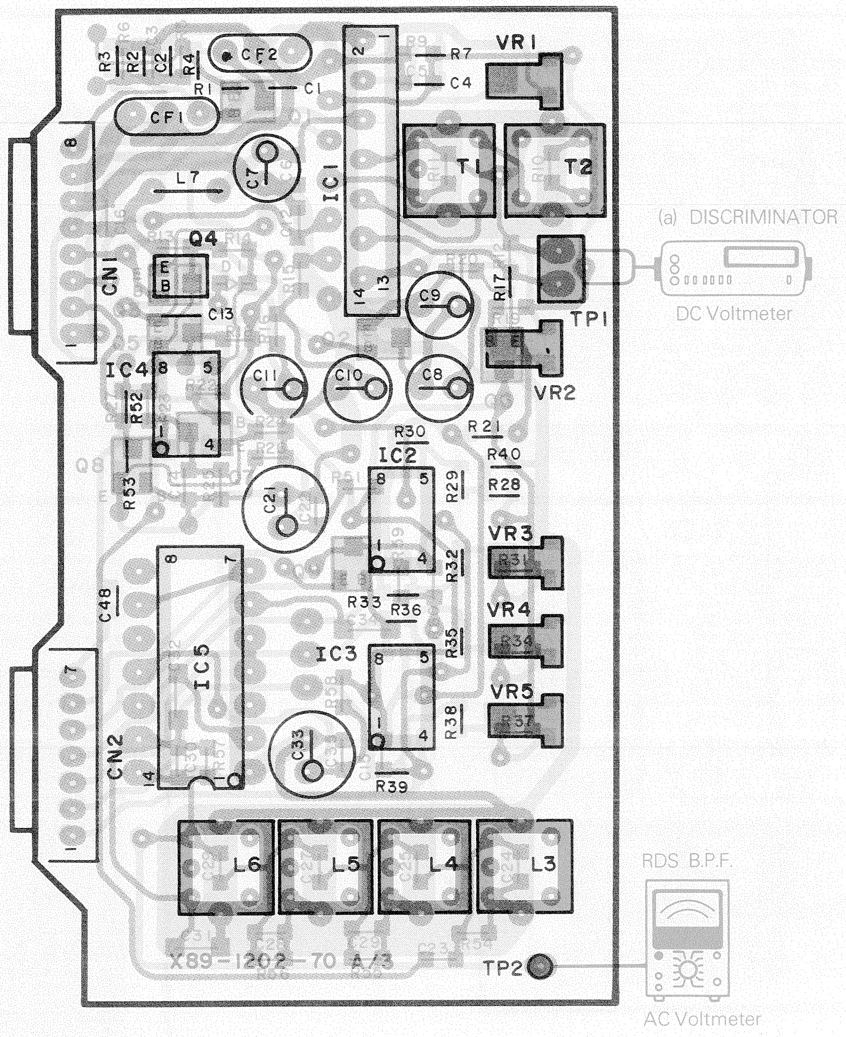
Ref. No. IC	Ref. No. Q	Address
	1	5U
	2	5U
	3	5N
	4	5Q
	5	2N
	6	2N
	7	1N
	8	2N
	9	4U
	10	4U
	11	4M
	12	4M
	13	4M
	14	4M
	15	4N
	16	4N
	17	4U
	18	4N
	19	4N
	20	3N
	21	3N
	22	
	23	3L
	24	2L
	25	1M
	26	2M
	27	1M
	28	1M
	29	2M
	30	2M
	31	
	32	
	33	2M
	34	2N
	35	2N
	36	2N
	37	1M
	38	2N
	39	2N
	40	1U
	41	1U
	42	2N
	43	2N
	44	2U
	45	1U
	46	1U
	47	3U
	48	3N
	49	3N
	50	3N

Ref. No. IC	Ref. No. Q	Address
	51	3N
	52	4M
	53	2P
	54	2P
	55	
	56	
	57	
	58	
	59	
	60	
	61	1R
	62	2R
	63	
	64	
	65	3Q
	66	3R
	67	3P
	68	4R
	69	2R
	70	3Q
	71	
	72	5R
	73	4P
	74	4P
	75	4P
	76	4P
	77	4Q
	78	
	79	4Q
	80	5R
	81	5Q
	91	6R
	92	7Q
	93	7R
	94	7R
	95	7Q
1		5N
2		5Q
3		5U
4		5U
5		4M
6		4M
7		4N
8		3M
9		3N
10		3D
11		2P
12		1P
13		1Q
14		2P
15		3Q
16		4Q
17		4Q
18		4P
19		5P
31		7N
32		

PC BOARD (Component Side View)

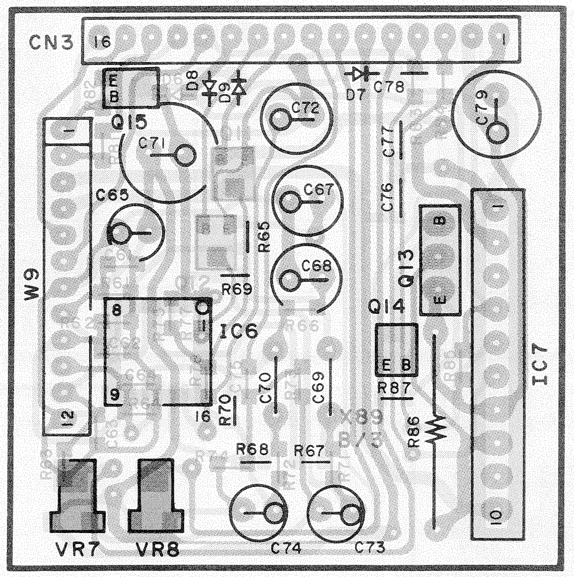

PL2
PL1
S20
LOUD.
PL7
PL5
S21
RST
PL6
IC1
LCD
IC2
W02-1226-05
S5
EJECT
PL4
PL8
PL3
S15
PLAY
S1
AM
S2
FM
S3
AUTO
S6
D2
S18
7
BLS
S14
4
ADV
S11
1
B.C
DOWN
LOCAL
S7
S19
8
S16
5
I.S
S12
2
T.C
CLOCK
S8
D1
S10
LNSS
S17
6
RPT
S13
3
MTL
S4
UP
T1
S9


6
CN4
1
X89 C/3
CN6
1
6
CN5
W8
4
1


R3
R2
C2
R4
CF2
R1
C1
R7
VR1
C4
CF1
8
L7
C7
IC1
T1
T2
Q4
CN1
1
(a) DISCRIMINATOR
DC Voltmeter
C13
C9
R17
TP1
IC4
R52
C11
C10
C8
VR2
Q8
R53
R30
R21
IC2
R40
R28
C21
R29
VR3
C48
R33
R36
R32
VR4
IC5
IC3
R35
VR5
7
CN2
C33
R38
R39
L6
L5
L4
L3
RDS B.P.F.
X89-1202-70 A/3
TP2
AC Voltmeter

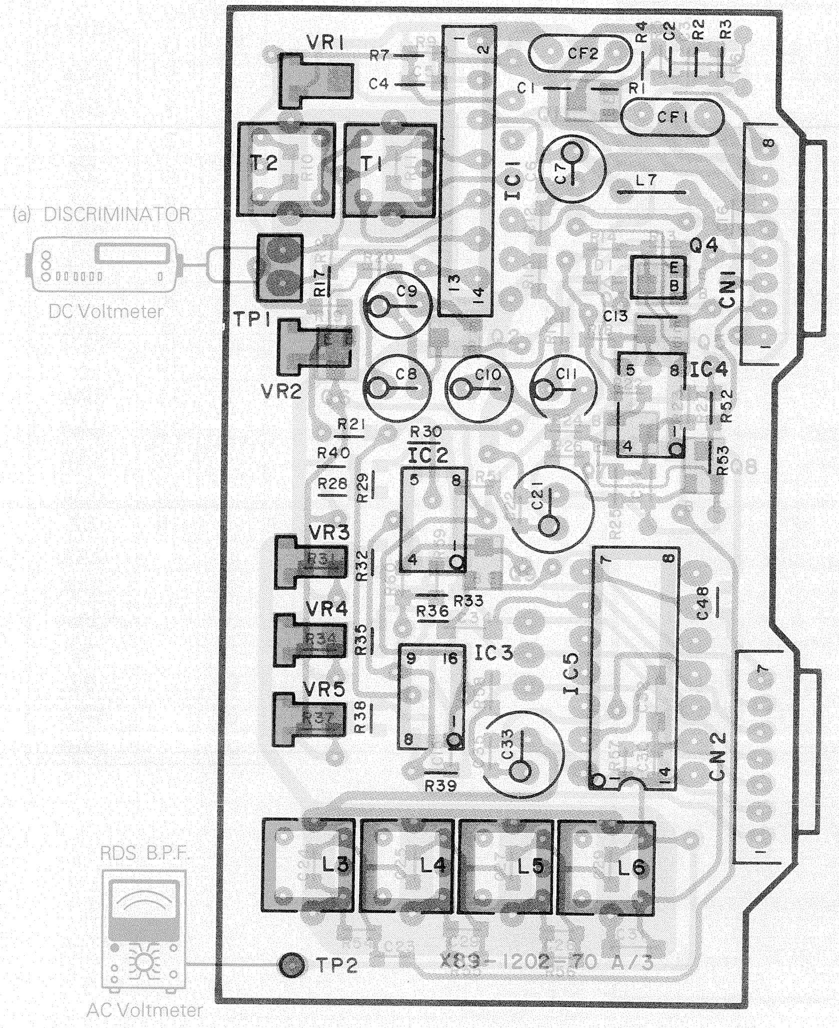
X89-1202-70

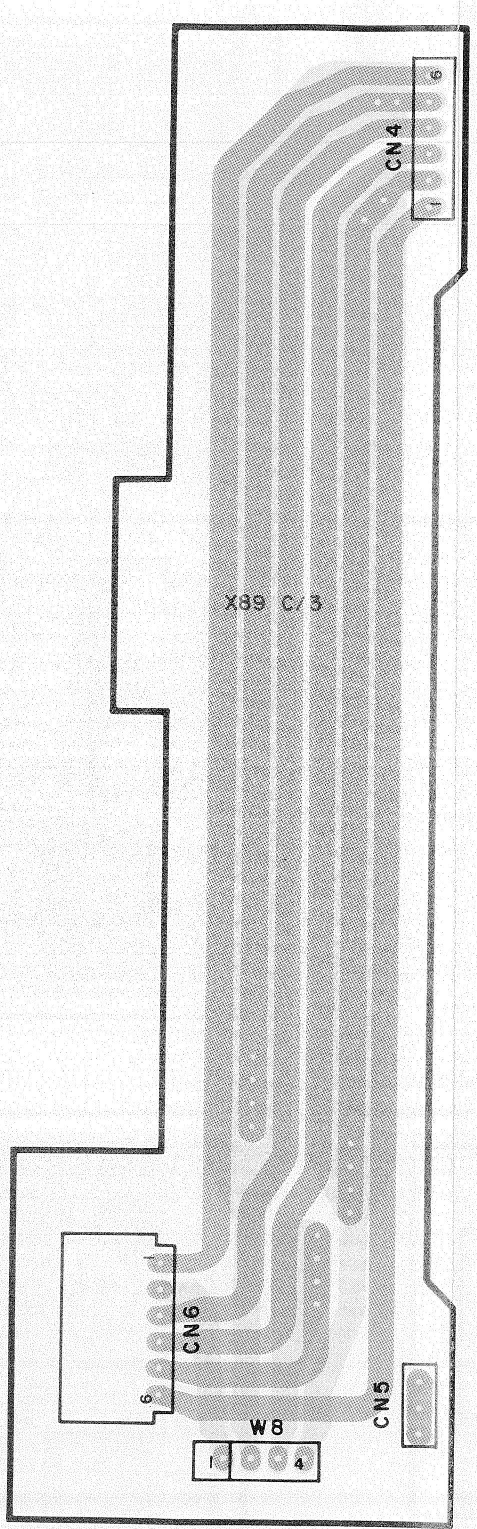
Ref. No. IC	Ref. No. Q	Address
	1	2AA
	2	2AA
	3	2Z
	4	2Z
	5	2Z
	6	2AA
	7	3AA
	8	3Z
	9	3AA
	10	
	11	5AA
	12	6AA
	13	6AB
	14	6AB
	15	5Z
1		2AA
2		3AA
3		3AA
4		2Z
5		3Z
6		6AA
7		6AB

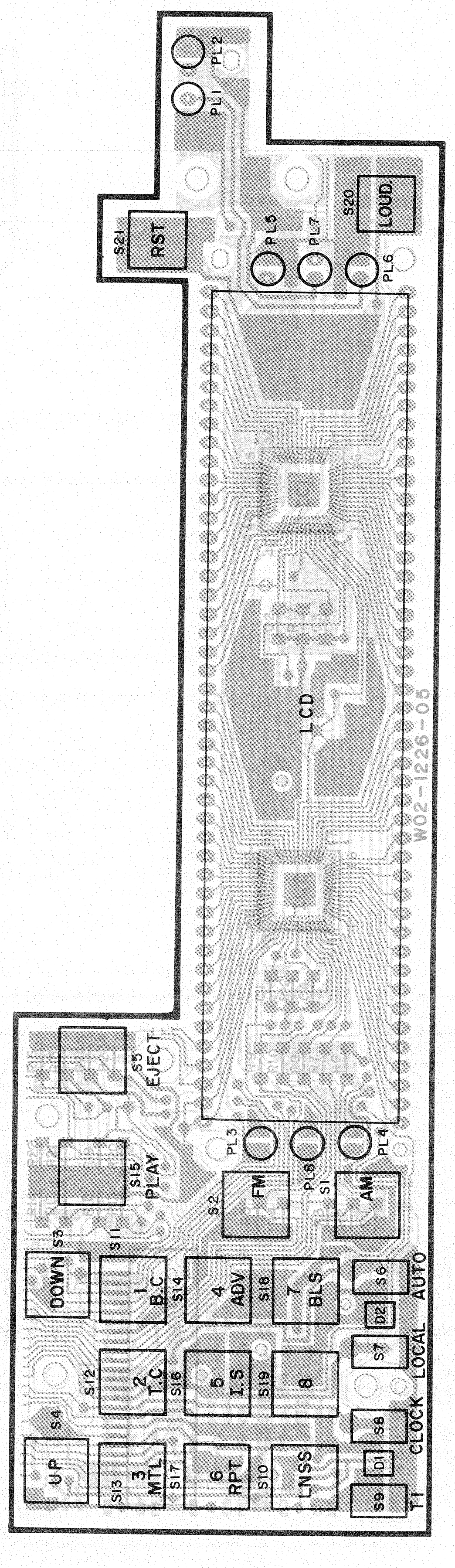

CN3
16
1
Q15
D8
D9
D7
C78
C72
C79
C71
C77
C65
C67
C76
R65
W9
C68
R69
Q13
Q14
IC6
IC7
C70
C69
R70
R87
X89 B/3
R86
R68
R67
VR7
VR8
C74
C73

Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (Foil Side View)

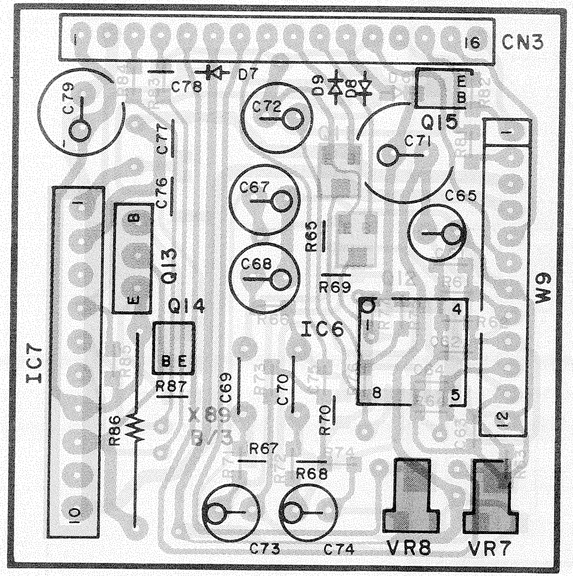

(a) DISCRIMINATOR
DC Voltmeter
RDS B.P.F.
AC Voltmeter
TP1
TP2
VR1
VR2
VR3
VR4
VR5
T1
T2
IC1
IC2
IC3
IC4
IC5
Q4
CN1
CN2
CF1
CF2
L3
L4
L5
L6
L7
X89-1202-70 A/3


CN4
X89 C/3
CN6
CN5
W8

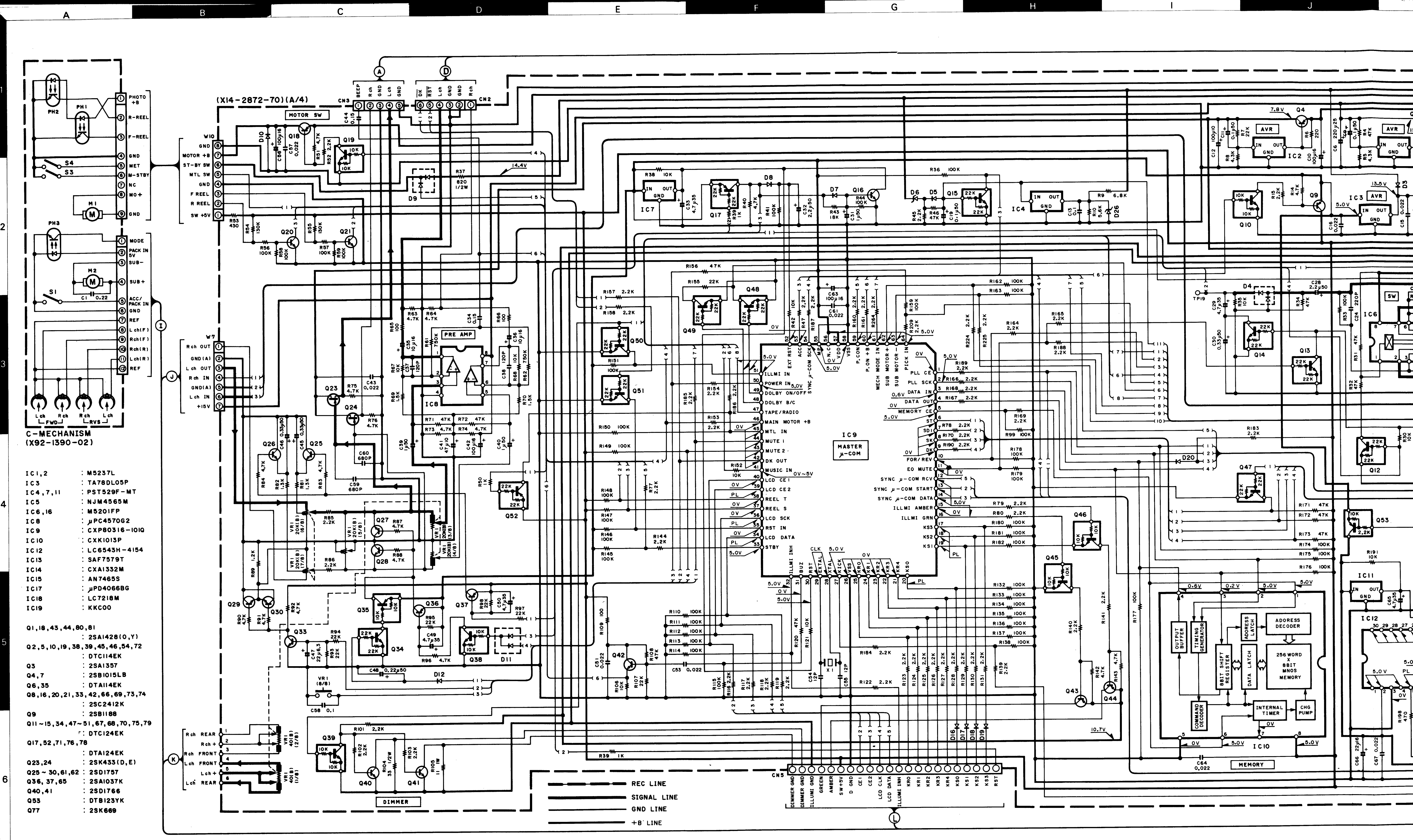

PL1
PL2
S21
RST
PL5
PL7
S20
LOUD.
PL6
LCD
W02-1226-05
S5
EJECT
S15
PLAY
PL3
PL8
PL4
S2
FM
S1
AM
S3
DOWN
S11
S14
1 B.C
4 ADV
S18
7 BLS
S6
AUTO
D2
S7
LOCAL
S12
2 T.C
S16
5 I.S
S19
8
S8
CLOCK
S4
UP
S13
3 MTL
S17
6 RPT
S10
LNSS
D1
S9
T1

X89-1202-70

Ref. No. IC	 Q	Address
	1	2AG
	2	2AF
	3	2AG
	4	2AG
	5	2AG
	6	2AF
	7	3AG
	8	3AG
	9	3AG
	10	
	11	5AG
	12	6AG
	13	6AF
	14	6AF
	15	5AG
1		2AG
2		3AF
3		3AF
4		2AG
5		3AG
6		6AG
7		6AF

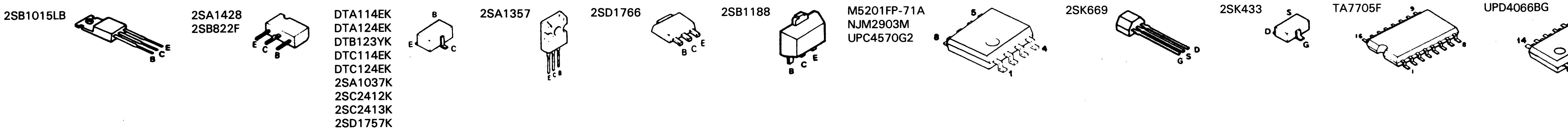

CN3
D7
C78
D9
D8
Q15
C79
C77
C76
C72
C71
C67
C65
C68
Q13
Q14
IC6
IC7
W9
R65
R69
R87
R86
C69
C70
R70
R67
R68
X89 B/3
C73
C74
VR8
VR7

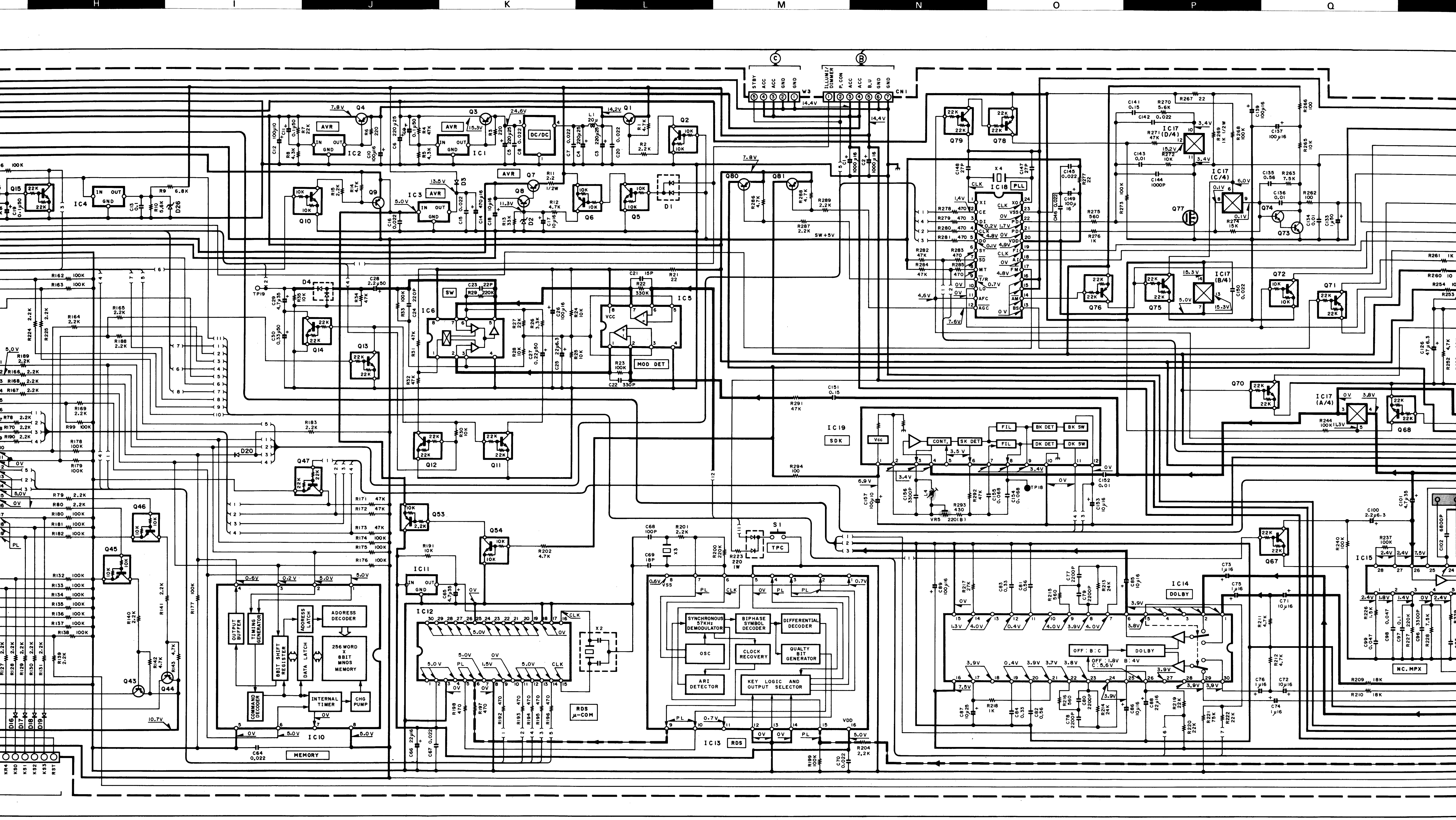
Refer to the schematic diagram for the values of resistors and capacitors.

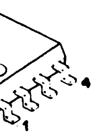

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
(X14-2872-70)(A/4)
PH1
PH2
PH3
PHOTO +B
R-REEL
F-REEL
GND
MET
M-STBY
NC
MO+
S4
S3
M1
M2
S1
MODE
PACK IN 5V
SUB-
SUB+
ACC/PACK IN
REF
Lch(F)
Rch(F)
Rch(R)
Lch(R)
FWD
RVS
C-MECHANISM
(X92-1390-02)
W10
MOTOR +B
ST-BY SW
MTL SW
F REEL
R REEL
SW +5V
W7
Rch OUT
GND(A)
Lch OUT
Rch IN
Lch IN
+15V
CH3
BEEP
CH2
MOTOR SW
PRE AMP
IC7
IC8
IC9
MASTER µ-COM
IC4
IC2
IC3
AVR
IC6
IC10
IC11
IC12
14.4V
7.8V
13.5V
10.7V
DIMMER
MEMORY
OUTPUT BUFFER
TIMING GENERATOR
8BIT SHIFT REGISTER
ADDRESS LATCH
ADDRESS DECODER
DATA LATCH
256 WORD x 8BIT MNOS MEMORY
COMMAND DECODER
INTERNAL TIMER
CHG PUMP
CN5
DIMMER GND
ILLUMI GND
GREEN
AMBER
SW +5V
D GND
CE1
CE2
LCD CLK
LCD DATA
ILLUMI INH
KR0
KR1
KR2
KR3
KR4
KS0
KS1
KS2
KS3
RST
Rch REAR
Rch FRONT
Lch FRONT
Lch REAR
REC LINE
SIGNAL LINE
GND LINE
+B LINE

IC1,2 : M5237L
IC3 : TA78DL05P
IC4,7,11 : PST529F-MT
IC5 : NJM4565M
IC6,16 : M5201FP
IC8 : µPC4570G2
IC9 : CXP80316-101Q
IC10 : CXK1013P
IC12 : LC6543H-4154
IC13 : SAF7579T
IC14 : CXA1332M
IC15 : AN7465S
IC17 : µPD4066BG
IC18 : LC7218M
IC19 : KKC00

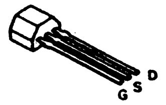
Q1,18,43,44,80,81
: 2SA1428(O,Y)
Q2,5,10,19,38,39,45,46,54,72
: DTC114EK
Q3 : 2SA1357
Q4,7 : 2SB1015LB
Q6,35 : DTA114EK
Q8,16,20,21,33,42,66,69,73,74
: 2SC2412K
Q9 : 2SB1188
Q11~15,34,47~51,67,68,70,75,79
: DTC124EK
Q17,52,71,76,78
: DTA124EK
Q23,24 : 2SK433(D,E)
Q25~30,61,62 : 2SD1757
Q36,37,65 : 2SA1037K
Q40,41 : 2SD1766
Q53 : DTB123YK
Q77 : 2SK669


2SB1015LB
B
C
E
2SA1428
2SB822F
E
C
B
DTA114EK
DTA124EK
DTB123YK
DTC114EK
DTC124EK
2SA1037K
2SC2412K
2SC2413K
2SD1757K
B
E
C
2SA1357
E C B
2SD1766
B C E
2SB1188
B C E
M5201FP-71A
NJM2903M
UPC4570G2
5
8
4
1
2SK669
G S D
2SK433
S
D
G
TA7705F
9
16
8
1
UPD4066BG
14

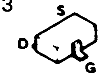

H
I
J
K
L
M
N
O
P
Q
STBY
ACC
ACC
GND
GND
W3
ILLUMI/DIMMER
P.CON
ACC
B.U
GND
GND
CN1
14.4V
AVR
IC2
IC1
DC/DC
IC3
IC4
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q15
D1
D2
D3
D26
Q80
Q81
SW+5V
IC18
PLL
X4
IC17 (D/4)
IC17 (C/4)
IC17 (B/4)
IC17 (A/4)
Q77
Q78
Q79
Q73
Q74
Q76
Q75
Q72
Q71
Q70
Q68
Q67
IC6
SW
IC5
MOD DET
Q13
Q14
D4
TP19
Q11
Q12
D20
Q47
Q46
Q45
Q43
Q44
Q53
Q54
IC19
SDK
Vcc
CONT.
SK DET
FIL
BK DET
BK SW
DK DET
DK SW
VR5 220(B)
TP18
IC11
IC12
X2
RDS μ-COM
IC10
MEMORY
OUTPUT BUFFER
TIMING GENERATOR
ADDRESS LATCH
ADDRESS DECODER
256 WORD X 8BIT MNOS MEMORY
8BIT SHIFT REGISTER
DATA LATCH
COMMAND DECODER
INTERNAL TIMER
CHG PUMP
IC13
RDS
X3
S1
TPC
SYNCHRONOUS 57KHz DEMODULATOR
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
OSC
CLOCK RECOVERY
QUALITY BIT GENERATOR
ARI DETECTOR
KEY LOGIC AND OUTPUT SELECTOR
IC14
DOLBY
OFF : B : C
OFF : 1.8V B : 4V C : 5.6V
IC15
NC.MPX
KR4
KS0
KS1
KS2
KS3
RST
D16
D17
D18
D19



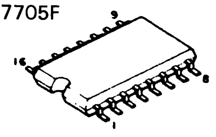
2SK669



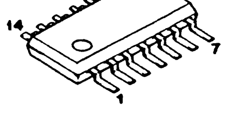
2SK433



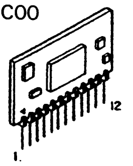
TA7705F



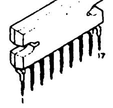
UPD4066BG



KKC00



TA8221H

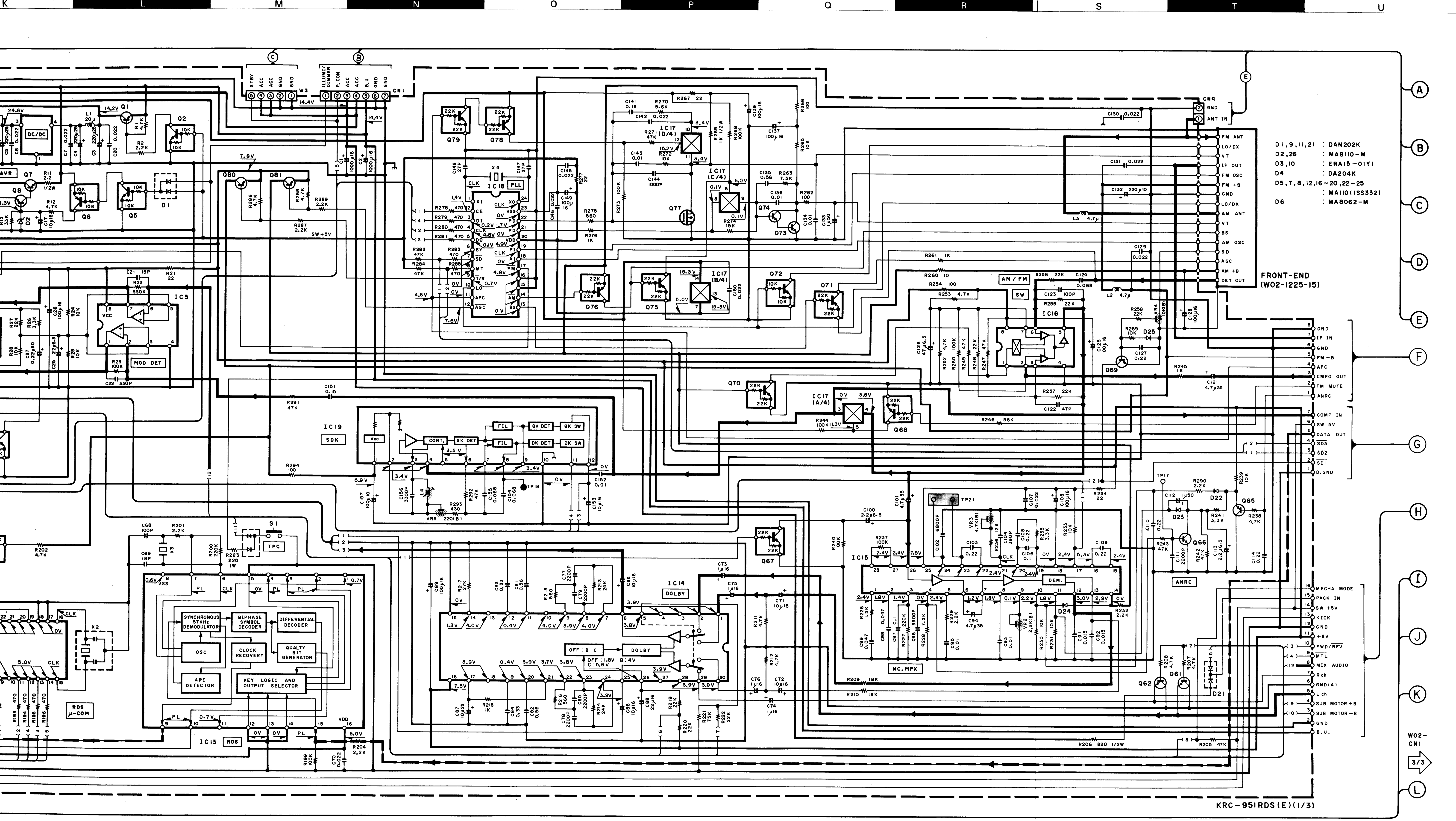


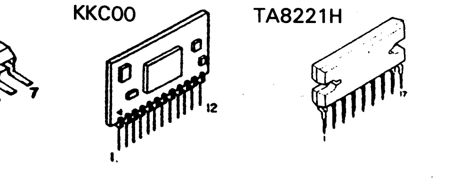
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswert
hochohmigen Spannungsmesser gemes
ken die Meßwerte aufgrund von Untersc
zelnen Instrumenten oder Geräten u. U. ge


K
L
M
N
O
P
Q
R
S
T
U
D1,9,11,21 : DAN202K
D2,26 : MA8110-M
D3,10 : ERA15-01Y1
D4 : DA204K
D5,7,8,12,16~20,22~25 : MA110(1SS332)
D6 : MA8062-M
FRONT-END (W02-1225-15)
CN1
CN4
W3
STBY
ACC
GND
ILLUMI/DIMMER
P.CON
B.U
DC/DC
AVR
MOD DET
IC5
IC13
RDS
IC14
DOLBY
IC15
NC.MPX
IC16
IC17 (D/4)
IC17 (C/4)
IC17 (B/4)
IC17 (A/4)
IC18
PLL
IC19
SDK
SYNCHRONOUS 57KHz DEMODULATOR
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
OSC
CLOCK RECOVERY
QUALTY BIT GENERATOR
ARI DETECTOR
KEY LOGIC AND OUTPUT SELECTOR
RDS µ-COM
TPC
S1
AM / FM
SW
ANRC
DEM.
TP17
TP18
TP21
FM ANT
LO/DX
VT
IF OUT
FM OSC
FM +B
AM ANT
BS
AM OSC
SD
AGC
AM +B
DET OUT
IF IN
CMPO OUT
FM MUTE
COMP IN
SW 5V
DATA OUT
SD3
SD2
SD1
D.GND
MECHA MODE
PACK IN
SW +5V
KICK
+8V
FWD/REV
MTL
MIX AUDIO
Rch
GND(A)
Lch
SUB MOTOR +B
SUB MOTOR -B
B.U.
W02-CN1
3/3
KRC-951RDS(E)(1/3)


KKC00
TA8221H

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DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

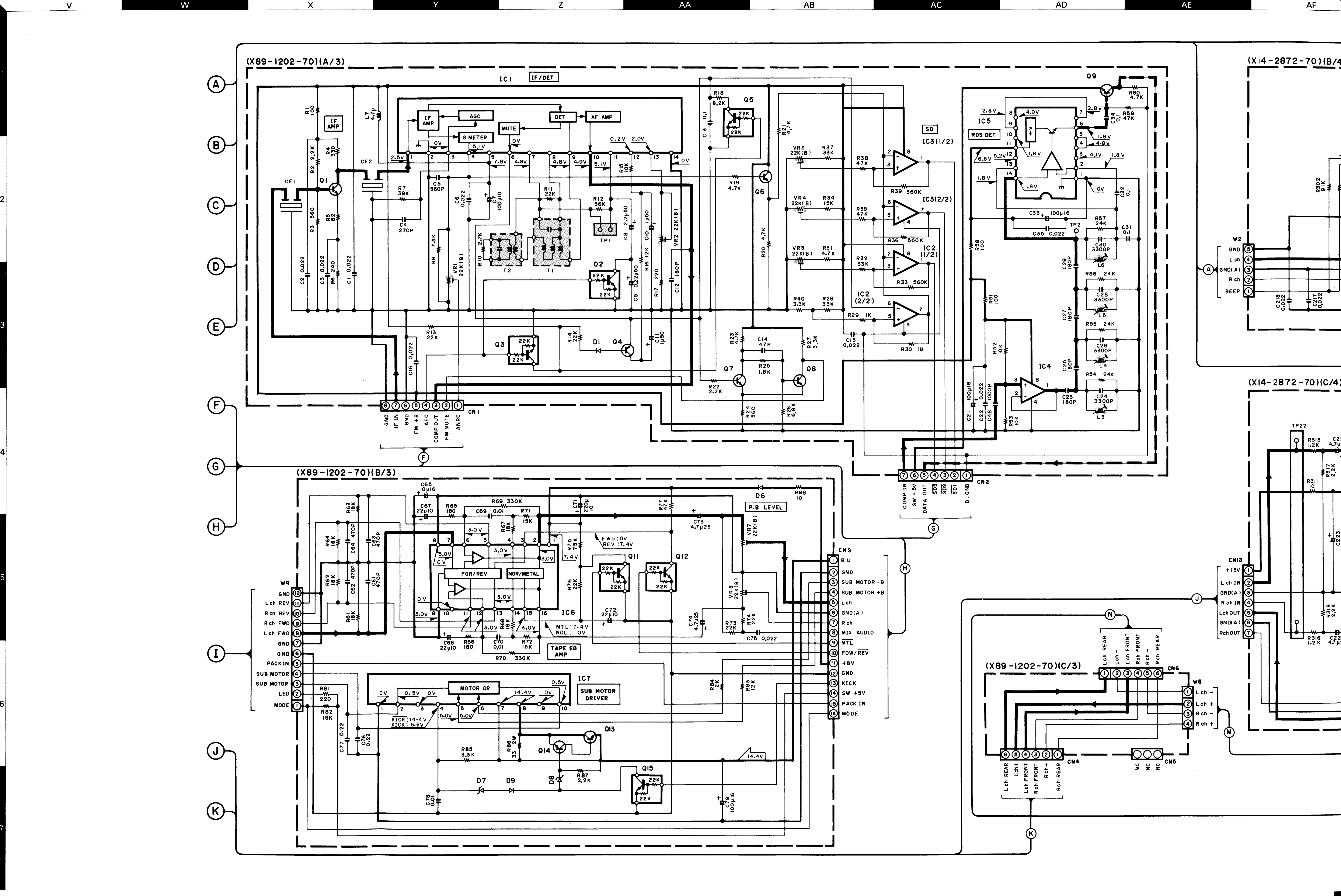
Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

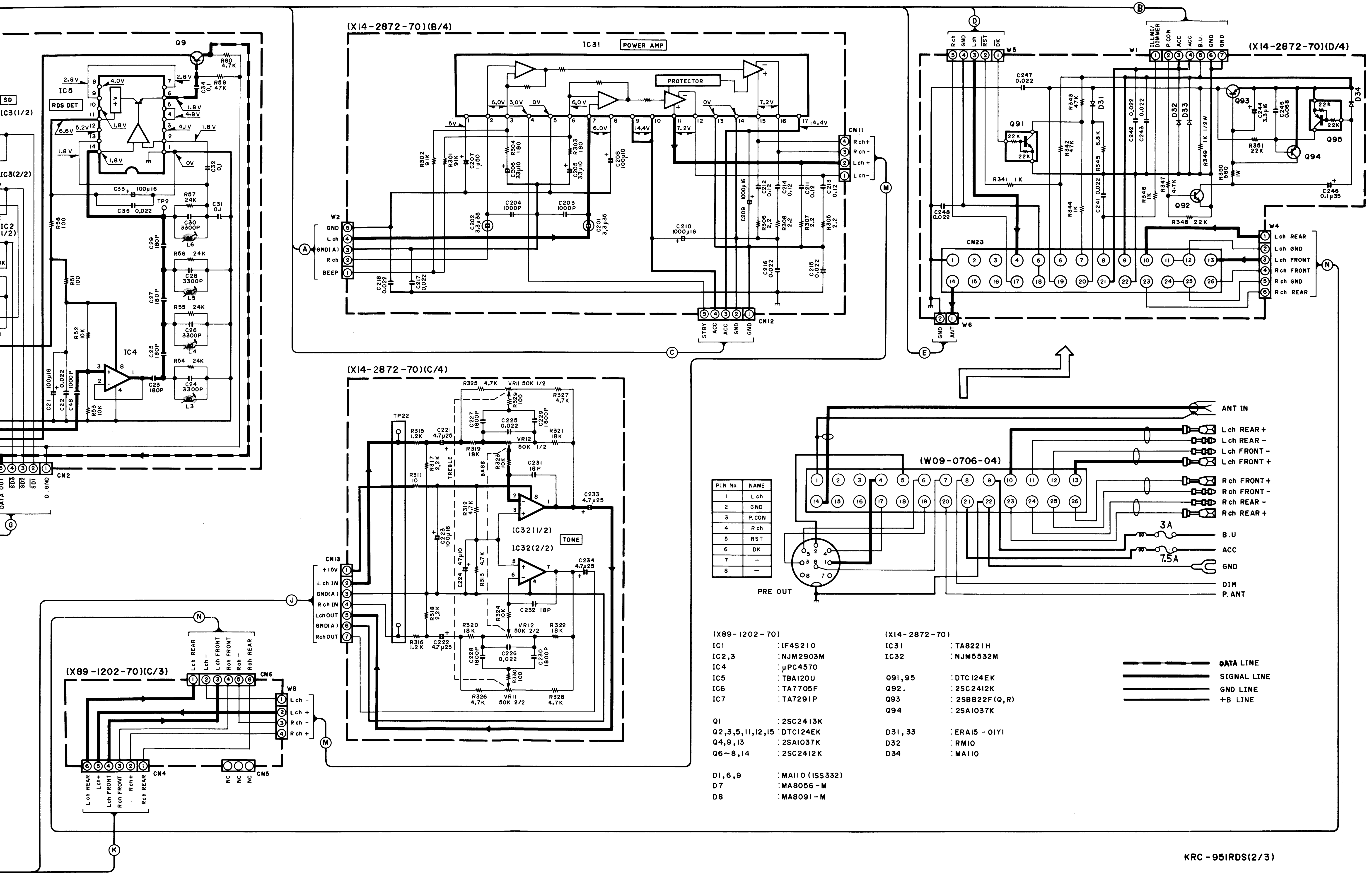
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

Y36-1272-70

KRC-951RDS

KENWOOD


V
W
X
Y
Z
AA
AB
AC
AD
AE
AF
(X89-1202-70)(A/3)
IC1
IF/DET
IF AMP
AGC
S METER
MUTE
DET
AF AMP
CF1
CF2
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
T1
T2
TP1
TP2
D1
VR1 22K(B)
VR2 22K(B)
SD
IC3(1/2)
IC3(2/2)
IC2(1/2)
IC2(2/2)
IC4
IC5
RDS DET
VR5 22K(B)
VR4 22K(B)
VR3 22K(B)
L3
L4
L5
L6
CN1
GND
IF IN
GND
FM +B
AFC
COMP OUT
FM MUTE
ANRC
CN2
COMP IN
SW +5V
DATA OUT
SD3
SD2
SD1
D. GND
(X14-2872-70)(B/4)
W2
GND
L ch
GND(A)
R ch
BEEP
(X14-2872-70)(C/4)
TP22
CN13
+15V
L ch IN
GND(A)
R ch IN
Lch OUT
GND(A)
Rch OUT
(X89-1202-70)(B/3)
IC6
FOR/REV
NOR/METAL
TAPE EQ AMP
FWD: 0V
REV: 7.4V
MTL: 7.4V
NOL: 0V
D6
P.B LEVEL
VR7 22K(B)
VR8 22K(B)
Q11
Q12
Q13
Q14
Q15
D7
D8
D9
IC7
MOTOR DR
SUB MOTOR DRIVER
KICK: 14.4V
KICK: 6.6V
W9
GND
L ch REV
R ch REV
R ch FWD
L ch FWD
GND
GND
PACK IN
SUB MOTOR
SUB MOTOR
LED
MODE
CN3
B.U
GND
SUB MOTOR -B
SUB MOTOR +B
L ch
GND(A)
R ch
MIX AUDIO
MTL
FOW/REV
+8V
GND
KICK
SW +5V
PACK IN
MODE
(X89-1202-70)(C/3)
CN6
L ch REAR
L ch -
L ch FRONT
R ch FRONT
R ch -
R ch REAR
W8
L ch -
L ch +
R ch -
R ch +
CN4
L ch REAR
L ch +
L ch FRONT
R ch FRONT
R ch +
R ch REAR
CN5
NC
NC
NC
A
B
C
D
E
F
G
H
I
J
K
M
N


(X14-2872-70)(B/4)
IC31
POWER AMP
PROTECTOR
W2
GND
L ch
GND(A)
R ch
BEEP
CN11
Rch+
Rch-
Lch+
Lch-
CN12
STBY
ACC
ACC
GND
GND
(X14-2872-70)(C/4)
TP22
TREBLE
BASS
VR11 50K 1/2
VR12 50K 1/2
VR12 50K 2/2
VR11 50K 2/2
IC32(1/2)
IC32(2/2)
TONE
CN13
+15V
L ch IN
GND(A)
R ch IN
Lch OUT
GND(A)
Rch OUT
(X14-2872-70)(D/4)
W5
R ch
GND
L ch
RST
DK
W1
ILLMI/DIMMER
P.CON
ACC
ACC
B.U.
GND
GND
Q91
Q92
Q93
Q94
Q95
D31
D32
D33
D34
CN23
W4
Lch REAR
Lch GND
Lch FRONT
Rch FRONT
Rch GND
Rch REAR
W6
GND
ANT
(W09-0706-04)
ANT IN
L ch REAR +
L ch REAR -
L ch FRONT -
L ch FRONT +
R ch FRONT +
R ch FRONT -
R ch REAR -
R ch REAR +
3A
7.5A
B.U
ACC
GND
DIM
P. ANT
PRE OUT
Q9
IC5
RDS DET
IC3(1/2)
IC3(2/2)
IC2
IC4
TP2
SD
CN2
D. GND
(X89-1202-70)(C/3)
CN6
Lch REAR
Lch -
Lch FRONT
Rch FRONT
Rch -
Rch REAR
W8
Lch -
Lch +
Rch -
Rch +
CN4
Lch REAR
Lch+
Lch FRONT
Rch FRONT
Rch+
Rch REAR
CN5
NC
NC
NC
A
B
C
D
E
G
J
K
M
N

PIN No.	NAME
1	L ch
2	GND
3	P.CON
4	R ch
5	RST
6	DK
7	—
8	—

(X89-1202-70)

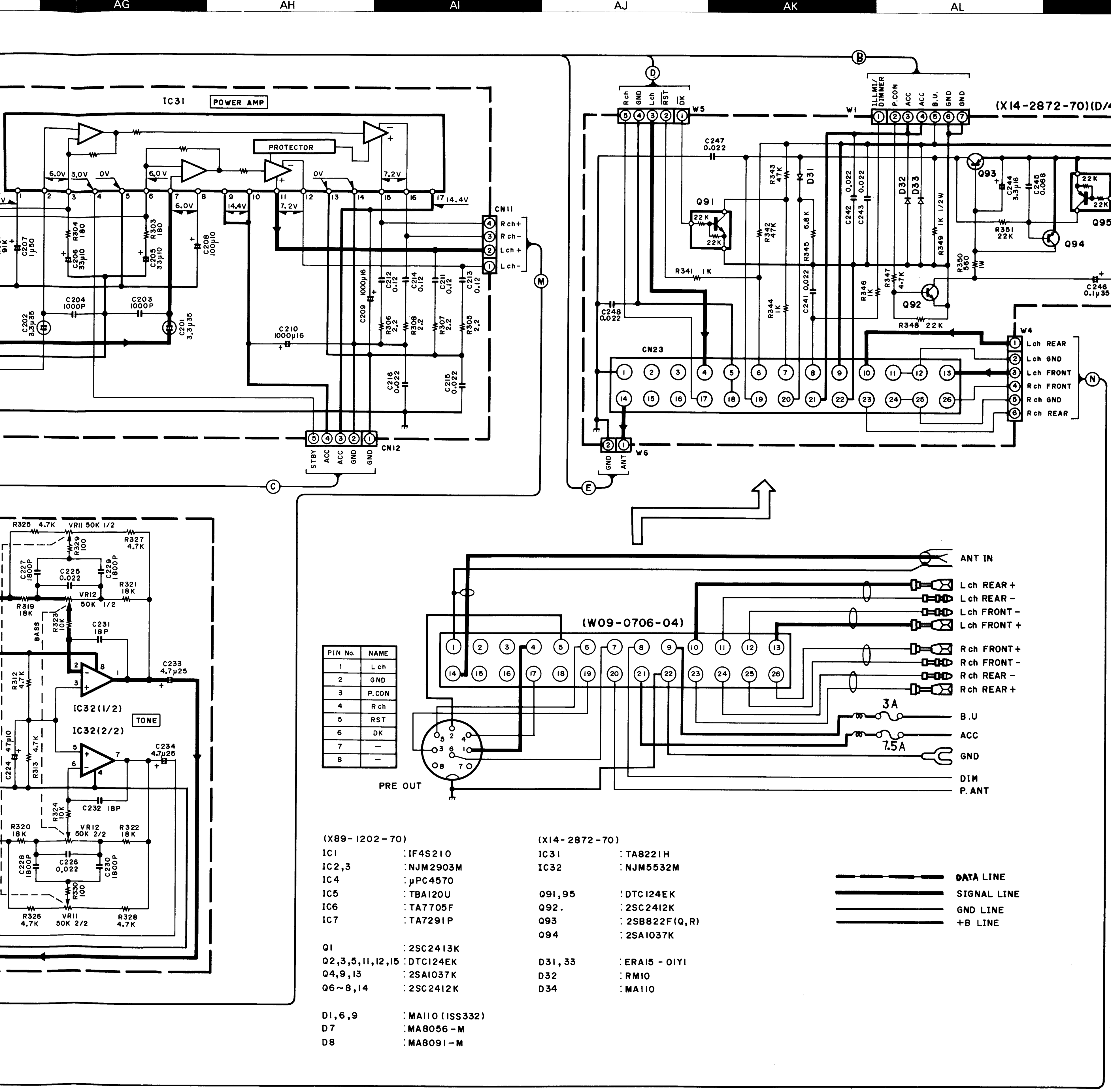
IC1	:IF4S210
IC2,3	:NJM2903M
IC4	:μPC4570
IC5	:TBA120U
IC6	:TA7705F
IC7	:TA7291P
Q1	:2SC2413K
Q2,3,5,11,12,15	:DTC124EK
Q4,9,13	:2SA1037K
Q6~8,14	:2SC2412K
D1,6,9	:MA110 (1SS332)
D7	:MA8056-M
D8	:MA8091-M

(X14-2872-70)

IC31	:TA8221H
IC32	:NJM5532M
Q91,95	:DTC124EK
Q92.	:2SC2412K
Q93	:2SB822F(Q,R)
Q94	:2SA1037K
D31, 33	:ERA15 - 01Y1
D32	:RM10
D34	:MA110

DATA LINE
SIGNAL LINE
GND LINE
+B LINE

KRC-951RDS(2/3)


AG
AH
AI
AJ
AK
AL
AM
AN
AO
AP
AQ
IC31
POWER AMP
PROTECTOR
6.0V
3.0V
0V
7.2V
14.4V
CN11
Rch+
Rch-
Lch+
Lch-
CN12
STBY
ACC
GND
C201 3.3µ35
C202 3.3µ35
C203 1000P
C204 1000P
C205 33µ10
C206 33µ10
C207 1µ50
C208 100µ10
C209 1000µ16
C210 1000µ16
C211 0.12
C212 0.12
C213 0.12
C214 0.12
C215 0.022
C216 0.022
R303 180
R304 180
R305 2.2
R306 2.2
R307 2.2
R308 2.2
W5
Rch
GND
Lch
RST
DK
W1
ILLUMI/DIMMER
P.CON
ACC
B.U.
GND
(X14-2872-70)(D/4)
C247 0.022
C248 0.022
Q91
Q92
Q93
Q94
Q95
22K
R341 1K
R342 47K
R343 47K
R344 1K
R345 5.6K
R346 1K
R347 4.7K
R348 22K
R349 1K 1/2W
R350 560 1W
R351 22K
D31
D32
D33
D34
C241 0.022
C242 0.022
C243 0.022
C244 3.3µ16
C245 0.068
C246 0.1µ35
CN23
W4
Lch REAR
Lch GND
Lch FRONT
Rch FRONT
Rch GND
Rch REAR
W6
ANT
R325 4.7K
VR11 50K 1/2
R327 4.7K
R329 100
C227 1800P
C225 0.022
C229 1800P
R321 18K
R319 18K
VR12 50K 1/2
R323 10K
BASS
C231 18P
C233 4.7µ25
R312 4.7K
IC32(1/2)
TONE
IC32(2/2)
C224 47µ10
R313 4.7K
C234 4.7µ25
R324 10K
C232 18P
R320 18K
VR12 50K 2/2
R322 18K
C228 1800P
C226 0.022
C230 1800P
R330 100
R326 4.7K
VR11 50K 2/2
R328 4.7K
(W09-0706-04)
ANT IN
Lch REAR+
Lch REAR-
Lch FRONT-
Lch FRONT+
Rch FRONT+
Rch FRONT-
Rch REAR-
Rch REAR+
3A
B.U
ACC
7.5A
GND
DIM
P. ANT
PRE OUT
DATA LINE
SIGNAL LINE
GND LINE
+B LINE

PIN No.	NAME
1	Lch
2	GND
3	P.CON
4	Rch
5	RST
6	DK
7	–
8	–

(X89-1202-70)

IC1 :IF4S210
IC2,3 :NJM2903M
IC4 :µPC4570
IC5 :TBA120U
IC6 :TA7705F
IC7 :TA7291P

Q1 :2SC2413K
Q2,3,5,11,12,15 :DTC124EK
Q4,9,13 :2SA1037K
Q6~8,14 :2SC2412K

D1,6,9 :MA110 (ISS332)
D7 :MA8056-M
D8 :MA8091-M

(X14-2872-70)

IC31 :TA8221H
IC32 :NJM5532M

Q91,95 :DTC124EK
Q92. :2SC2412K
Q93 :2SB822F(Q,R)
Q94 :2SA1037K

D31,33 :ERA15-01Y1
D32 :RM10
D34 :MA110

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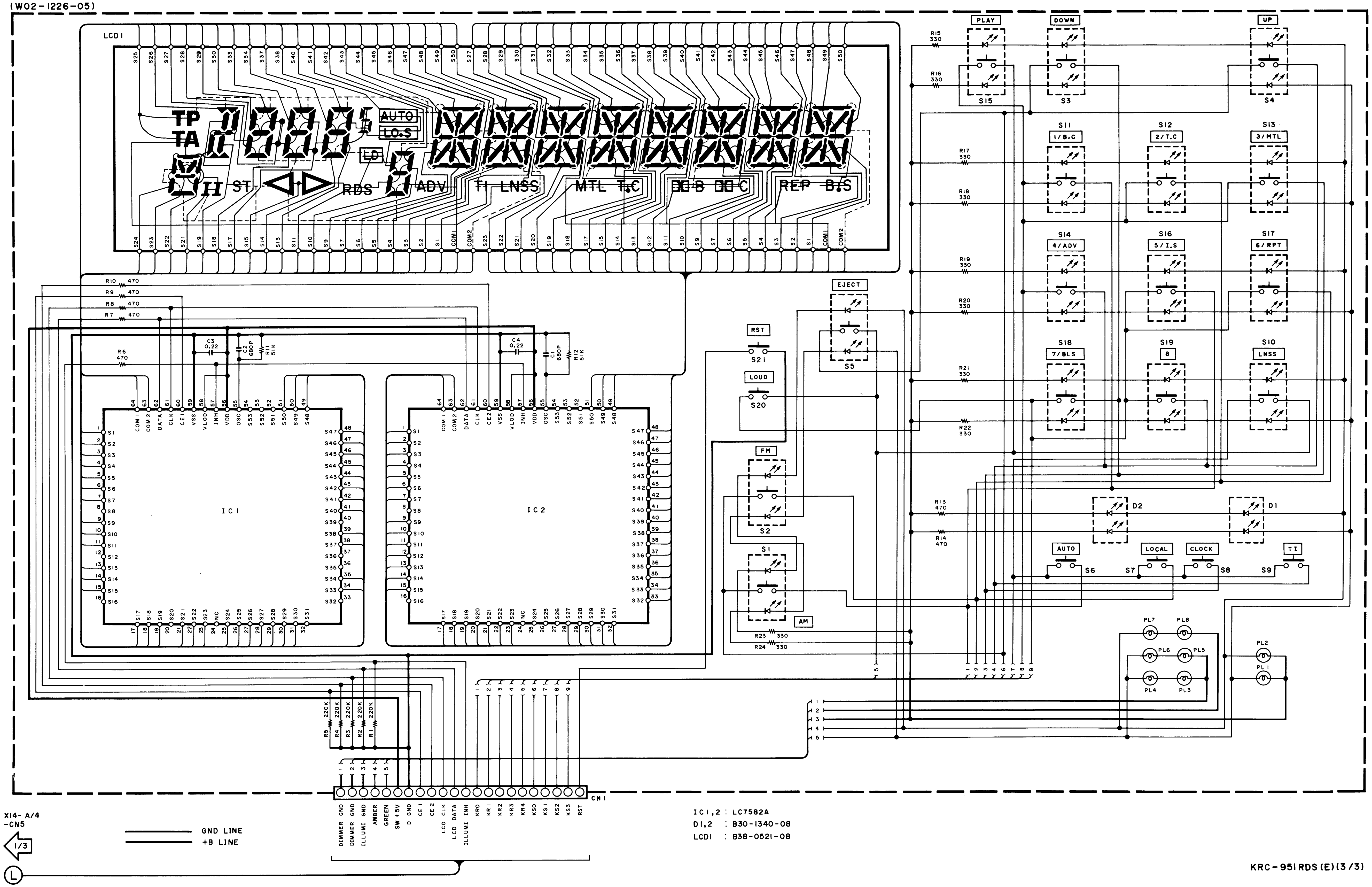
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

KRC-951RDS

KENWOOD


(W02-1226-05)
LCD1
TP
TA
AUTO
LO.S
LD
ST
RDS
ADV
TI LNSS
MTL T.C
B C
REP B.S
R10 470
R9 470
R8 470
R7 470
R6 470
C3 0.22
C2 680P
R11 51K
C4 0.22
C1 680P
R12 51K
IC1
IC2
COM1
COM2
DATA
CLK
CE1
CE2
VSS
VLOD
INH
VDD
OSC
R5 220K
R4 220K
R3 220K
R2 220K
R1 220K
PLAY
DOWN
UP
R15 330
R16 330
S15
S3
S4
S11 1/B.C
S12 2/T.C
S13 3/MTL
R17 330
R18 330
S14 4/ADV
S16 5/I.S
S17 6/RPT
R19 330
R20 330
EJECT
S5
RST
S21
LOUD
S20
S18 7/BLS
S19 8
S10 LNSS
R21 330
R22 330
FM
S2
S1
AM
R23 330
R24 330
R13 470
R14 470
D2
D1
AUTO S6
LOCAL S7
CLOCK S8
TI S9
PL7
PL8
PL6
PL5
PL4
PL3
PL2
PL1
CN1
DIMMER GND
DIMMER GND
ILLUMI GND
AMBER
GREEN
SW +5V
D GND
CE1
CE2
LCD CLK
LCD DATA
ILLUMI INH
KR0
KR1
KR2
KR3
KR4
KS0
KS1
KS2
KS3
RST
X14- A/4 -CN5
1/3
L
GND LINE
+B LINE

IC1,2 : LC7582A
D1,2 : B30-1340-08
LCD1 : B38-0521-08

KRC-951RDS(E)(3/3)

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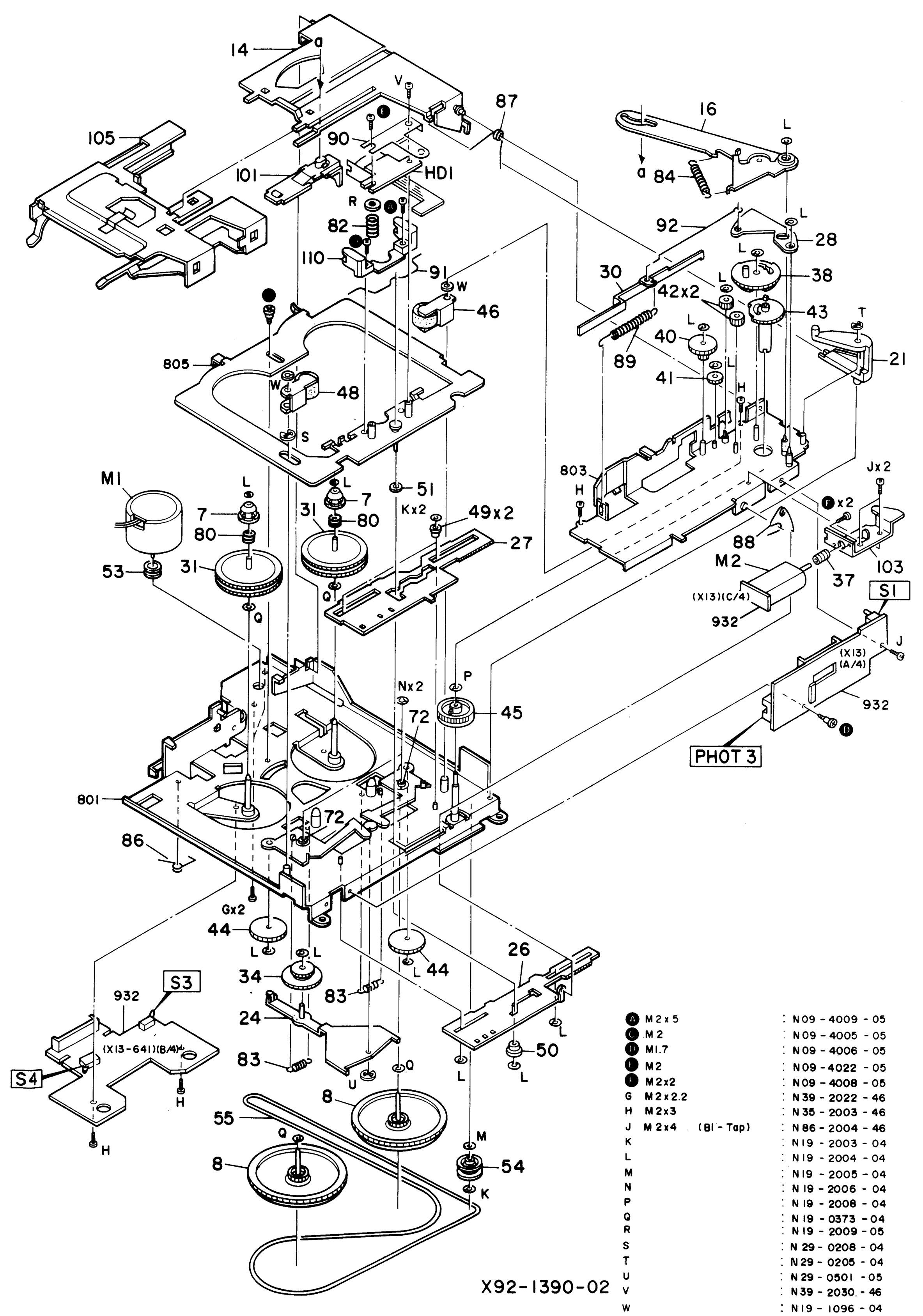
Y36-1272-70

KRC-951RDS

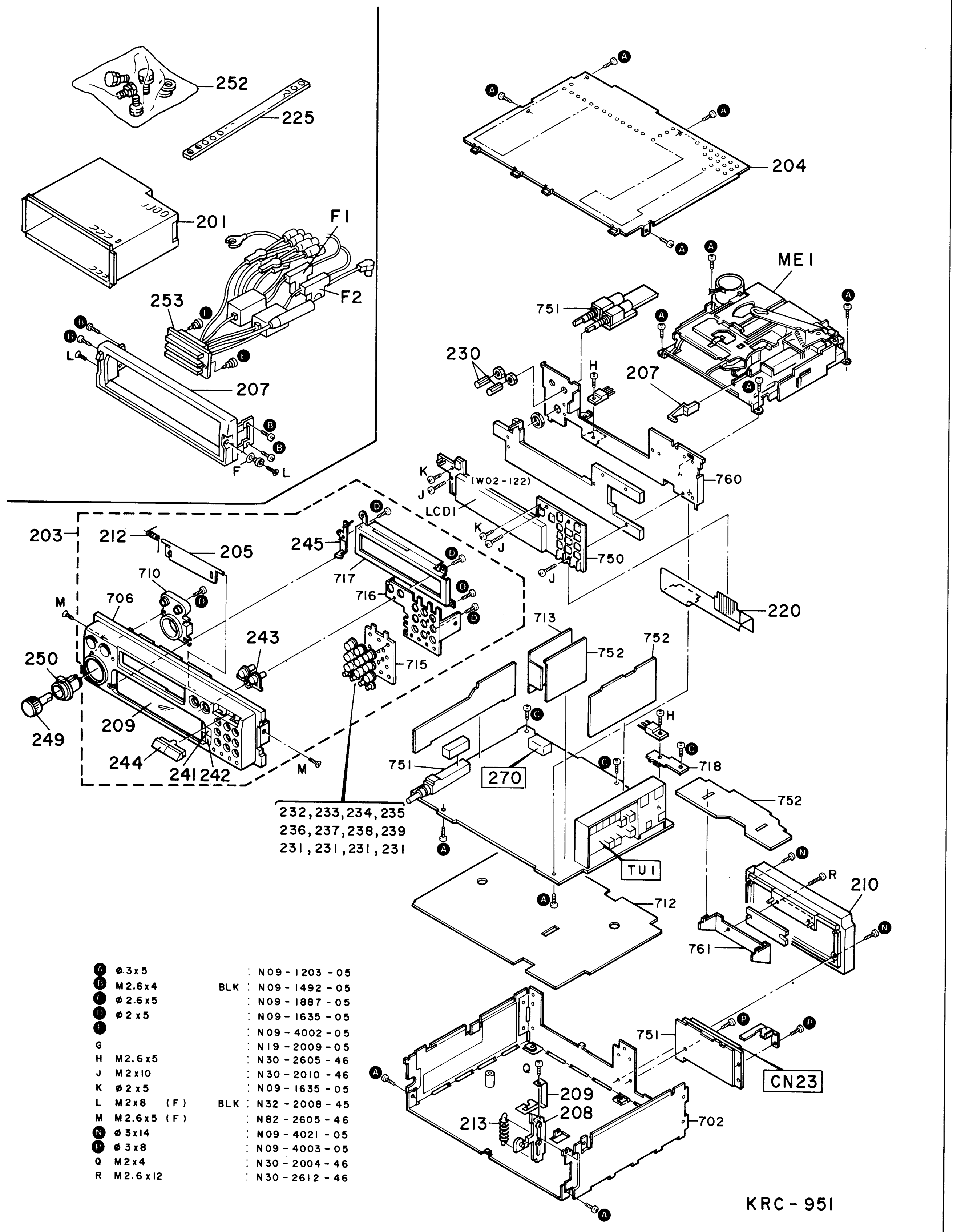
KENWOOD

EXPLODED VIEW (MECHANISM UNIT)


A
B
1
2
3
14
a
V
87
105
90
101
HDI
16
L
84
a
R
82
110
91
W
46
92
28
38
30
42x2
43
T
21
89
40
41
H
805
48
S
M1
7
80
53
31
51
Kx2
49x2
27
803
H
Jx2
x2
88
M2
37
103
(X13)(C/4)
932
S1
Q
J
(X13)
(A/4)
932
Nx2
P
45
72
PHOT 3
801
86
Gx2
44
26
932
S3
34
83
24
50
(X13-641)(B/4)
S4
55
8
M
54
K
H
U
X92-1390-02

Ⓐ	M2x5		N09-4009-05
Ⓒ	M2		N09-4005-05
Ⓓ	M1.7		N09-4006-05
Ⓔ	M2		N09-4022-05
Ⓕ	M2x2		N09-4008-05
G	M2x2.2		N39-2022-46
H	M2x3		N35-2003-46
J	M2x4	(Bi-Tap)	N86-2004-46
K			N19-2003-04
L			N19-2004-04
M			N19-2005-04
N			N19-2006-04
P			N19-2008-04
Q			N19-0373-04
R			N19-2009-05
S			N29-0208-04
T			N29-0205-04
U			N29-0501-05
V			N39-2030-46
W			N19-1096-04

EXPLODED VIEW (UNIT)


C
D
1
2
3
252
225
204
ME1
201
F1
F2
253
207
751
230
H
207
F
L
760
K
(W02-122)
LCD1
J
750
203
212
205
245
710
717
716
220
M
706
713
752
243
715
250
249
209
244
241
242
751
270
718
232,233,234,235
236,237,238,239
231,231,231,231
TU1
712
210
R
761
CN23
209
208
213
702
KRC-951

Ⓐ	ø3x5			N09-1203-05
Ⓑ	M2.6x4		BLK	N09-1492-05
Ⓒ	ø2.6x5			N09-1887-05
Ⓓ	ø2x5			N09-1635-05
Ⓕ				N09-4002-05
G				N19-2009-05
H	M2.6x5			N30-2605-46
J	M2x10			N30-2010-46
K	ø2x5			N09-1635-05
L	M2x8	(F)	BLK	N32-2008-45
M	M2.6x5	(F)		N82-2605-46
Ⓝ	ø3x14			N09-4021-05
Ⓟ	ø3x8			N09-4003-05
Q	M2x4			N30-2004-46
R	M2.6x12			N30-2612-46

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
RC-951RDS						
201	1C	＊	A01-2508-31	METALLIC CABINET		
203	2C	＊	A20-7553-03	PANEL ASSY		
204	1D	＊	A52-0617-02	TOP PLATE		
205	2C	＊	A53-1513-03	CASSETTE LID		
			B44-6005-04	UPC CODE LABEL	E	
			B44-6006-04	UPC CODE LABEL		
			B44-6007-04	UPC CODE LABEL		
207	1C		B07-2014-12	ESCUTCHEON ASSY		
209	2C	＊	B10-1346-03	FRONT GLASS		
-			B46-0100-20	WARRANTY CARD		
-			B46-0182-04	ID CARD		
-		＊	B50-7960-00	INSTRUCTION MANUAL		
-			B58-0803-13	CAUTION CARD (210X148,DBP)		
-		＊	B58-0871-04	CAUTION CARD (105X74)		
207	2D		D10-2525-04	LEVER		
208	3D		D10-2549-04	LEVER		
209	3D		D10-2550-04	LEVER		
210	3D	＊	F01-1337-03	HEAT SINK		
211	1C	＊	F07-1007-05	COVER		
212	2C		G01-2525-04	TORSION COIL SPRING		
213	3D		G01-2040-04	EXTENSION SPRING		
219	1C		G01-2370-04	TORSION COIL SPRING		
-		＊	H01-9108-04	ITEM CARTON CASE		
-		＊	H03-3122-04	OUTER CARTON CASE		
-			H10-4322-03	POLYSTYRENE FOAMED FIXTURE		
-			H25-0329-04	PROTECTION BAG (280X450X0.03)		
-			H25-0336-04	PROTECTION BAG (170X250X0.03)		
220	2D	＊	J25-7093-02	PRINTED WIRING BOARD		
225	1C		J54-0059-04	STAY		
-		＊	J61-0209-05	WIRE BAND		
226	2C		K01-0601-03	HANDLE		
230	1D		K23-1004-04	KNOB (TONE)		
231	2C		K24-0576-04	KNOB		
232	2C		K24-0599-03	KNOB (1,B/C)		
233	2C		K24-0600-03	KNOB (2,B.SKIP)		
234	2C		K24-0601-03	KNOB (3,T.C)		
235	2C		K24-0602-03	KNOB (4,REPEAT)		
236	2C		K24-0603-03	KNOB (5,SCAN)		
237	2C	＊	K24-0625-03	KNOB (6)		
238	2C	＊	K24-0626-03	KNOB (7)		
239	2C		K24-0616-03	KNOB (8)		
240	2C	＊	K24-0628-03	KNOB (RDS)		
241	2C	＊	K24-0629-04	KNOB (FM)		
242	2C	＊	K24-0630-04	KNOB (AM)		
243	2C		K25-0537-03	KNOB (EJECT,PLAY)		
244	2C	＊	K25-0538-03	KNOB (TUN)		
245	2C		K25-0536-03	KNOB (LOUD,RESET)		
248	1C	＊	K27-3510-04	KNOB (LEVER)		
249	2C		K29-5538-03	KNOB (VOL)		
250	2C	＊	K29-5539-13	KNOB (FADER)		
252	1C		N99-0277-05	SCREW SET		

E: Scandinavia & Europe **K**: USA **P**: Canada
U: PX(Far East, Hawaii) **T**: England **M**: Other Areas
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KRC-951RDS

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
A	1D		N09-1203-05	TAPTITE SCREW (3X5)		
B	1C		N09-1492-05	MACHINE SCREW (2.6X3.5)		
C	2D		N09-1887-05	TAPTITE SCREW		
D	2C		N09-1635-05	TAPTITE SCREW (2X5)		
E	1C		N09-4002-05	STEPPED SCREW (M2.6X3)		
G	1C	*	N19-2002-05	CORRUGATED WASHER		
J	2D	*	N30-2010-46	PAN HEAD MACHINE SCREW		
L	1C		N32-2008-45	FLAT HEAD MACHINE SCREW		
M	2C		N88-2605-46	FLAT HEAD TAPTITE SCREW		
N	3D		N09-4021-05	TAPPING SCREW (3X14)		
P	3D		N09-4003-05	TAPTITE SCREW (3X8,+)		
Q	3D		N30-2004-46	PAN HEAD MACHINE SCREW		
R	3D		N30-2612-46	PAN HEAD MACHINE SCREW		
253	1C	*	W09-0706-04	DETACHBLE CONNECTOR		
ME1	1D	*	X92-1390-02	MECHANISM ASSY		
SUB-CIRCUIT UNIT (X13-6410-02)						
C1			CF92V1H224J	MF 0.22UF J		
S1	2B		S40-1140-05	PUSH SWITCH		
S3 ,4	3A		S46-1601-05	LEAF SWITCH		
PHOT1,2			T95-0201-05	OPTO ISOLATOR		
PHOT3	2B		T95-0202-05	OPTO ISOLATOR		
SYNTHESIZER UNIT (X14-2872-70)						
C1 ,2			C90-1403-05	ELECTRO 1000UF 16WV		
C3 -6			CE04KW1E221M	ELECTRO 220UF 25WV		
C7 ,8			CK73FB1H223K	CHIP C 0.022UF K		
C9			CE04NW1H0R1M	ELECTRO 0.1UF 50WV		
C10			CE04NW1C101M	ELECTRO 100UF 16WV		
C11			CE04NW1H0R1M	ELECTRO 0.1UF 50WV		
C12			CE04DW1A101M	ELECTRO 100UF 10WV		
C13			CK73EB1E104K	CHIP C 0.10UF K		
C14			C90-1402-05	ELECTRO 470WV 16WV		
C15 ,16			CK73FB1H223K	CHIP C 0.022UF K		
C17 ,18			CE04NW1C100M	ELECTRO 10UF 16WV		
C19			CE04NW1H0R1M	ELECTRO 0.1UF 50WV		
C20			CK73FB1H223K	CHIP C 0.022UF K		
C21			CC73FCH1H150J	CHIP C 15PF J		
C22			CC73FSL1H331J	CHIP C 330PF J		
C23			CC73FCH1H220J	CHIP C 22PF J		
C24			CC73FSL1H221J	CHIP C 220PF J		
C25			CE04CW0J220M	ELECTRO 22UF 6.3WV		
C26			CE04NW1C101M	ELECTRO 100UF 16WV		
C27			CE04NW1HR22M	ELECTRO 0.22UF 50WV		
C28			CE04NW1H2R2M	ELECTRO 2.2UF 50WV		
C29			CE04CW1V4R7M	ELECTRO 4.7UF 35WV		
C30			CE04NW1HR33M	ELECTRO 0.33UF 50WV		
C31			CE04NW1H010M	ELECTOR 1.0UF 50WV		
C32			CE04NW1H2R2M	ELECTRO 2.2UF 50WV		
C33			CE04CW1V4R7M	ELECTRO 4.7UF 35WV		
C34			C93-0024-05	CERAMIC 0.15UF K		
C35 ,36			CE04MW1C100M	ELECTRO 10UF 16WV		
C37 ,38			CC73FSL1H121J	CHIP C 120PF J		
C39 ,40			CE04MW1H010M	ELECTRO 1.0UF 50WV		

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C41			CE04NW1A470M	ELECTRO 47UF 10WV		
C42			CE04NW1C101M	ELECTRO 100UF 16WV		
C43			CK73FB1H223K	CHIP C 0.022UF K		
C45 ,46			CE04NW1HR33M	ELECTRO 0.33UF 50WV		
C47			CE04CW0J220M	ELECTRO 22UF 6.3WV		
C48			CE04NW1HR22M	ELECTRO 0.22UF 50WV		
C49 ,50			CE04CW1V4R7M	ELECTRO 4.7UF 35WV		
C51 -53			CK73FB1H223K	CHIP C 0.022UF K		
C54 ,55			CC73FCH1H120J	CHIP C 12PF J		
C56			CE04NW1C101M	ELECTRO 100UF 16WV		
C57			CK73FB1H223K	CHIP C 0.022UF K		
C58			CK73EB1E104K	CHIP C 0.10UF K		
C59 ,60			CK73FB1H681K	CHIP C 680PF K		
C61			CK73FB1H223K	CHIP C 0.022UF K		
C63			CE04NW1C101M	ELECTRO 100UF 16WV		
C64			CK73FB1H223K	CHIP C 0.022UF K		
C65			CE04CW1V4R7M	ELECTRO 4.7UF 35WV		
C66			CE04CW1C220M	ELECTRO 22UF 16WV		
C67			CK73FB1H223K	CHIP C 0.022UF K		
C68			CC73FSL1H101J	CHIP C 100PF J		
C69			CC73FCH1H180J	CHIP C 18PF J		
C70			CK73FB1H223K	CHIP C 0.022UF K		
C71 ,72			C90-2536-05	ELECTRO 10UF 16WV		
C73 -76		*	C90-2532-05	ELECTRO 1UF 16WV		
C77 -80			C93-1016-05	CERAMIC 2200PF 50WV		
C81 ,82		*	C93-1019-05	CERAMIC 0.56UF 16WV		
C83 ,84		*	C93-1018-05	CERAMIC 0.33UF 16WV		
C85 ,86			CE04MW1C100M	ELECTRO 10UF 16WV		
C87			CE04CW1E100M	ELECTRO 10UF 25WV		
C88			CE04CW1C220M	ELECTRO 22UF 16WV		
C89			CE04NW1C101M	ELECTRO 100UF 16WV		
C91 ,92			CK73FB1H153K	CHIP C 0.015UF K		
C93			CK73FB1H103K	CHIP C 0.010UF K		
C94			CE04CW1V4R7M	ELECTRO 4.7UF 35WV		
C95			CK73FB1H103K	CHIP C 0.010UF K		
C96			CK73FB1H332K	CHIP C 3300PF K		
C97			CK73EB1E104K	CHIP C 0.10UF K		
C98 ,99		*	C93-1017-05	CERAMIC 0.047UF 16WV		
C100			C92-0005-05	CHIP-TAN 2.2UF 6.3WV		
C101			CE04CW1V4R7M	ELECTRO 4.7UF 35WV		
C102			CK73FB1H682K	CHIP C 6800PF K		
C103			C93-0025-05	CERAMIC 0.22UF K		
C104			CQ92P2A391J	MYLAR 390PF J		
C105			C93-0025-05	CERAMIC 0.22UF K		
C106			CK73EB1E104K	CHIP C 0.10UF K		
C107			CK73FB1H223K	CHIP C 0.022UF K		
C108			CE04NW1C101M	ELECTRO 100UF 16WV		
C109,110			C93-0025-05	CERAMIC 0.22UF K		
C111			CK73FB1H222K	CHIP C 2200PF K		
C112			CE04NW1H010M	ELECTOR 1.0UF 50WV		
C113			C92-0005-05	CHIP-TAN 2.2UF 6.3WV		
C114			C93-0025-05	CERAMIC 0.22UF K		
C121			CE04CW1V4R7M	ELECTRO 4.7UF 35WV		
C122			CC73FCH1H470J	CHIP C 47PF J		
C123			CC73FSL1H101J	CHIP C 100PF J		

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KRC-951RDS

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
C124			CK73EB1E683K	CHIP C 0.068UF K		
C125			CE04NW1C101M	ELECTRO 100UF 16WV		
C126			CE04CW0J470M	ELECTRO 47UF 6.3WV		
C127			C93-0025-05	CERAMIC 0.22UF K		
C128			CE04NW1C101M	ELECTRO 100UF 16WV		
C129-131			CK73FB1H223K	CHIP C 0.022UF K		
C132			CE04NW1A221M	ELECTRO 220UF 10WV		
C133			CE04NW1H010M	ELECTOR 1.0UF 50WV		
C134			CK73FB1H103K	CHIP C 0.010UF K		
C135		*	C93-1019-05	CERAMIC 0.56UF 16WV		
C136			CK73FB1H103K	CHIP C 0.010UF K		
C137			CE04NW1C101M	ELECTRO 100UF 16WV		
C139			CE04NW1C101M	ELECTRO 100UF 16WV		
C141			C93-0024-05	CERAMIC 0.15UF K		
C142			CK73FB1H223K	CHIP C 0.022UF K		
C143			CK73FB1H103K	CHIP C 0.010UF K		
C144			CK73FB1H102K	CHIP C 1000PF K		
C145,146			CK73FB1H223K	CHIP C 0.022UF K		
C147,148			CC73FCH1H270J	CHIP C 27PF J		
C149			CE04NW1C101M	ELECTRO 100UF 16WV		
C150			CK73FB1H223K	CHIP C 0.022UF K		
C151			C93-0024-05	CERAMIC 0.15UF K		
C152			CK73FB1H103K	CHIP C 0.010UF K		
C153			CE04NW1C100M	ELECTRO 10UF 16WV		
C154,155			CF92FV1H683J	MF 0.068UF J		
C156			CQ93HP2A332J	MYLAR 3300PF J		
C157			CE04DW1A101M	ELECTRO 100UF 10WV		
C201,202			C90-2526-05	ELECTRO 3.3UF 35WV		
C203,204			CK73FB1H102K	CHIP C 1000PF K		
C205,206			CE04DW1A330M	ELECTRO 33UF 10WV		
C207			CE04NW1H010M	ELECTOR 1.0UF 50WV		
C208			CE04DW1A101M	ELECTRO 100UF 10WV		
C209,210			C90-1403-05	ELECTRO 1000UF 16WV		
C211-214			CF92FV1H124J	MF 0.12UF J		
C215-218			CK73FB1H223K	CHIP C 0.022UF K		
C221,222			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C223			CE04NW1C101M	ELECTRO 100UF 16WV		
C224			CE04NW1A470M	ELECTRO 47UF 10WV		
C225,226			CF92FV1H223J	MF 0.022UF J		
C227-230			CF92FV1H182J	MF 1800PF J		
C231,232			CC73FCH1H180J	CHIP C 18PF J		
C233,234			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C241-243			CK73FB1H223K	CHIP C 0.022UF K		
C244			C92-0008-05	CHIP-TAN 3.3UF 16WV		
C245			CK73EB1E683K	CHIP C 0.068UF K		
C246			C92-0001-05	CHIP-TAN 0.1UF 35WV		
C247,248			CK73FB1H223K	CHIP C 0.022UF K		
		*	E29-1322-04	LEAD PLATE		
CN23	3D		E08-2601-05	RECTANGULAR RECEPTACLE		
		*	F02-0811-04	HEAT SINK		
		*	F20-1565-24	INSULATING SHEET		
		*	F20-1580-04	INSULATING SHEET		
		*	J19-2638-04	HOLDER		

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		*	J19-4368-04	HOLDER		
			J39-0148-04	SPACER		
L1			L39-0136-15	TRAP COIL		
L2 ,3			L40-4791-14	SMALL FIXED INDUCTOR(4.7UH,K)		
L4			L39-0156-05	TRAP COIL		
X1		*	L77-2003-05	CRYSTAL RESONATOR(8.388608MHZ)		
X2		*	L78-0503-05	RESONATOR (4.00MHZ)		
X3		*	L77-2002-05	CRYSTAL RESONATOR(4.3320MHZ)		
X4			L77-1166-05	CRYSTAL RESONATOR		
A	2D		N09-1203-05	TAPTITE SCREW (3X5,+)		
H	2D		N30-2605-46	PAN HEAD MACHINE SCREW		
R1			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R2			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R3			RK73FB2A221J	CHIP R 220 J 1/10W		
R4			RK73FB2A473J	CHIP R 47K J 1/10W		
R5			RK73FB2A432J	CHIP R 4.3K J 1/10W		
R6			RK73FB2A221J	CHIP R 220 J 1/10W		
R7			RK73FB2A223J	CHIP R 22K J 1/10W		
R8			RK73FB2A432J	CHIP R 4.3K J 1/10W		
R9			RK73FB2A123J	CHIP R 12K J 1/10W		
R10			RK73FB2A103J	CHIP R 10K J 1/10W		
R11			R92-2021-05	CHIP R 2.2 J 1/2W		
R12			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R13			RK73FB2A333J	CHIP R 33K J 1/10W		
R14			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R15			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R21			RK73FB2A220J	CHIP R 22 J 1/10W		
R22			RK73FB2A334J	CHIP R 330K J 1/10W		
R23			RK73FB2A104J	CHIP R 100K J 1/10W		
R24 ,25			RK73FB2A103J	CHIP R 10K J 1/10W		
R26			RK73FB2A512J	CHIP R 5.1K J 1/10W		
R27			RK73FB2A223J	CHIP R 22K J 1/10W		
R28			RK73FB2A103J	CHIP R 10K J 1/10W		
R29			RK73FB2A224J	CHIP R 220K J 1/10W		
R30			RK73FB2A103J	CHIP R 10K J 1/10W		
R31 ,32			RK73FB2A473J	CHIP R 47K J 1/10W		
R33			RK73FB2A104J	CHIP R 100K J 1/10W		
R34			RK73FB2A473J	CHIP R 47K J 1/10W		
R35			RK73FB2A103J	CHIP R 10K J 1/10W		
R36			RK73FB2A104J	CHIP R 100K J 1/10W		
R37			R92-2023-05	CHIP R 820 J 1/2W		
R38			RK73FB2A103J	CHIP R 10K J 1/10W		
R39			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R40			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R41			RK73FB2A104J	CHIP R 100K J 1/10W		
R42			RK73FB2A103J	CHIP R 10K J 1/10W		
R43			RK73FB2A473J	CHIP R 47K J 1/10W		
R44			RK73FB2A104J	CHIP R 100K J 1/10W		
R45			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R46			RK73FB2A473J	CHIP R 47K J 1/10W		
R47			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R50			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R51			RK73FB2A472J	CHIP R 4.7K J 1/10W		

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R52			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R53			RK73FB2A431J	CHIP R 430 J 1/10W		
R54 ,55			RK73FB2A134J	CHIP R 130K J 1/10W		
R56 -59			RK73FB2A104J	CHIP R 100K J 1/10W		
R61 ,62		*	RK73FB2A754J	CHIP R 750K J 1/10W		
R63 ,64			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R65 ,66			RK73FB2A101J	CHIP R 100 J 1/10W		
R67 ,68			RK73FB2A103J	CHIP R 10K J 1/10W		
R69 ,70			RK73FB2A152J	CHIP R 1.5K J 1/10W		
R71 ,72			RK73FB2A473J	CHIP R 47K J 1/10W		
R73 -76			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R77 -80			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R81 ,82			RK73FB2A132J	CHIP R 1.3K J 1/10W		
R83 ,84			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R85 ,86			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R87 ,88			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R89			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R90 -92			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R93 -95			RK73FB2A223J	CHIP R 22K J 1/10W		
R96			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R97 ,98			RK73FB2A223J	CHIP R 22K J 1/10W		
R99			RK73FB2A104J	CHIP R 100K J 1/10W		
R101-103			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R104		*	R92-2013-05	CHIP R 33 J 1/2W		
R105		*	R92-2011-05	CHIP R 11 J 1W		
R106			RK73FB2A103J	CHIP R 10K J 1/10W		
R107			RK73FB2A223J	CHIP R 22K J 1/10W		
R108			RK73FB2A473J	CHIP R 47K J 1/10W		
R109			RK73FB2A101J	CHIP R 100 J 1/10W		
R110-115			RK73FB2A104J	CHIP R 100K J 1/10W		
R116-119			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R120			RK73FB2A473J	CHIP R 47K J 1/10W		
R121			RK73FB2A103J	CHIP R 10K J 1/10W		
R122-131			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R132-138			RK73FB2A104J	CHIP R 100K J 1/10W		
R139-141			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R142,143			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R144			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R145-151			RK73FB2A104J	CHIP R 100K J 1/10W		
R152			RK73FB2A103J	CHIP R 10K J 1/10W		
R153,154			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R155			RK73FB2A223J	CHIP R 22K J 1/10W		
R156			RK73FB2A473J	CHIP R 47K J 1/10W		
R157,158			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R159			RK73FB2A104J	CHIP R 100K J 1/10W		
R160,161			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R162,163			RK73FB2A104J	CHIP R 100K J 1/10W		
R164-170			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R171-173			RK73FB2A473J	CHIP R 47K J 1/10W		
R174-182			RK73FB2A104J	CHIP R 100K J 1/10W		
R183-190			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R191			RK73FB2A103J	CHIP R 10K J 1/10W		
R192-198			RK73FB2A471J	CHIP R 470 J 1/10W		
R199			RK73FB2A104J	CHIP R 100K J 1/10W		
R200			RK73FB2A224J	CHIP R 220K J 1/10W		

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R201			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R202			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R203,204			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R205			RK73FB2A473J	CHIP R 47K J 1/10W		
R206			R92-2023-05	CHIP R 820 J 1/2W		
R207,208			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R209,210			RK73FB2A183J	CHIP R 18K J 1/10W		
R211,212			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R213,214			RK73FB2A243J	CHIP R 24K J 1/10W		
R215,216			RK73FB2A561J	CHIP R 560 J 1/10W		
R217			RK73FB2A273J	CHIP R 27K J 1/10W		
R218			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R219,220			RK73FB2A223J	CHIP R 22K J 1/10W		
R221			RK73FB2A753J	CHIP R 75K J 1/10W		
R222			RK73FB2A223J	CHIP R 22K J 1/10W		
R224,225			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R226			RK73FB2A152J	CHIP R 1.5K J 1/10W		
R227			RK73FB2A224J	CHIP R 220K J 1/10W		
R228			RK73FB2A752J	CHIP R 7.5K J 1/10W		
R229			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R230,231			RK73FB2A103J	CHIP R 10K J 1/10W		
R232			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R233			RK73FB2A103J	CHIP R 10K J 1/10W		
R234			RK73FB2A220J	CHIP R 22 J 1/10W		
R235			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R236			RK73FB2A123J	CHIP R 12K J 1/10W		
R237			RK73FB2A104J	CHIP R 100K J 1/10W		
R238			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R239			RK73FB2A103J	CHIP R 10K J 1/10W		
R240			RK73FB2A104J	CHIP R 100K J 1/10W		
R241			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R242,243			RK73FB2A473J	CHIP R 47K J 1/10W		
R244			RK73FB2A104J	CHIP R 100K J 1/10W		
R245			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R246			RK73FB2A563J	CHIP R 56K J 1/10W		
R247			RK73FB2A473J	CHIP R 47K J 1/10W		
R248			RK73FB2A223J	CHIP R 22K J 1/10W		
R249			RK73FB2A473J	CHIP R 47K J 1/10W		
R250,251			RK73FB2A104J	CHIP R 100K J 1/10W		
R252,253			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R254			RK73FB2A101J	CHIP R 100 J 1/10W		
R255-258			RK73FB2A223J	CHIP R 22K J 1/10W		
R259			RK73FB2A103J	CHIP R 10K J 1/10W		
R260			RK73FB2A100J	CHIP R 10 J 1/10W		
R261			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R262			RK73FB2A101J	CHIP R 100 J 1/10W		
R263			RK73FB2A752J	CHIP R 7.5K J 1/10W		
R264			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R265			RK73FB2A103J	CHIP R 10K J 1/10W		
R266			RK73FB2A101J	CHIP R 100 J 1/10W		
R267			RK73FB2A220J	CHIP R 22 J 1/10W		
R268			RK73FB2A104J	CHIP R 100K J 1/10W		
R269		*	R92-0366-05	CHIP R 560 J 1W		
R270			RK73FB2A562J	CHIP R 5.6K J 1/10W		
R271			RK73FB2A473J	CHIP R 47K J 1/10W		

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KRC-951RDS

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R272			RK73FB2A103J	CHIP R 10K J 1/10W		
R273			RK73FB2A104J	CHIP R 100K J 1/10W		
R274			RK73FB2A153J	CHIP R 15K J 1/10W		
R275			RK73FB2A561J	CHIP R 560 J 1/10W		
R276			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R277			RK73FB2A220J	CHIP R 22 J 1/10W		
R278-281			RK73FB2A471J	CHIP R 470 J 1/10W		
R282			RK73FB2A473J	CHIP R 47K J 1/10W		
R283			RK73FB2A471J	CHIP R 470 J 1/10W		
R284			RK73FB2A473J	CHIP R 47K J 1/10W		
R285			RK73FB2A471J	CHIP R 470 J 1/10W		
R286			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R287			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R288			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R289,290			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R291,292			RK73FB2A473J	CHIP R 47K J 1/10W		
R293			RK73FB2A431J	CHIP R 430 J 1/10W		
R294			RK73FB2A101J	CHIP R 100 J 1/10W		
R301,302			RK73FB2A913J	CHIP R 91K J 1/10W		
R303,304			RK73FB2A181J	CHIP R 180 J 1/10W		
R305-308			RK73EB2B2R2J	CHIP R 2.2 J 1/8W		
R311			RK73FB2A100J	CHIP R 10 J 1/10W		
R312,313			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R315,316			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R317,318			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R319-322			RK73FB2A183J	CHIP R 18K J 1/10W		
R323,324			RK73FB2A103J	CHIP R 10K J 1/10W		
R325-328			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R329,330			RK73FB2A101J	CHIP R 100 J 1/10W		
R341			RK73EB2B102J	CHIP R 1.0K J 1/8W		
R342,343			RK73FB2A473J	CHIP R 47K J 1/10W		
R344			RK73EB2B102J	CHIP R 1.0K J 1/8W		
R345			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R346			RK73EB2B102J	CHIP R 1.0K J 1/8W		
R347			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R348			RK73FB2A223J	CHIP R 22K J 1/10W		
R349		*	R92-0366-05	CHIP R 560 J 1W		
R350			R92-0365-05	CHIP R 1K J 1/2W		
R351			RK73FB2A223J	CHIP R 22K J 1/10W		
VR1		*	R24-3637-05	POTENTIOMETER(20KX5,40X2)		
VR2			R12-1067-05	TRIMMING POT.(2.2K)		
VR3			R12-1069-05	TRIMMING POT.(4.7K)		
VR4			R12-3096-05	TRIMMING POT.(10K)		
VR5			R12-0092-05	TRIMMING POT.(220)		
VR11,12			R10-4641-05	POTENTIOMETER(50KX2)		
S1			S40-1140-05	PUSH SWITCH		
D1			DAN202K	DIODE		
D2			MA8110-M	ZENER DIODE		
D3			ERA15-01Y1	DIODE		
D4			DA204K	DIODE		
D5			MA110	DIODE		
D5			1SS332	DIODE		
D6		*	MA8062-M	ZENER DIODE		
D7 ,8			MA110	DIODE		

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D7 ,8			1SS332	DIODE		
D9			DAN202K	DIODE		
D10			ERA15-01Y1	DIODE		
D11			DAN202K	DIODE		
D12			MA110	DIODE		
D12			1SS332	DIODE		
D16 -20			MA110	DIODE		
D16 -20			1SS332	DIODE		
D21			DAN202K	DIODE		
D22 -25			MA110	DIODE		
D22 -25			1SS332	DIODE		
D26			MA8110-M	ZENER DIODE		
D31			ERA15-01Y1	DIODE		
D32			RM10	DIODE		
D33			ERA15-01Y1	DIODE		
D34			MA110	DIODE		
D34			1SS332	DIODE		
IC1 ,2			M5237L	IC		
IC3		*	TA78DL05P	IC		
IC4			PST529F-MT	IC		
IC5			NJM4565M	IC		
IC6			M5201FP-71A	IC		
IC7			PST529F-MT	IC		
IC8			UPC4570G2	IC(OP AMP X2)		
IC9		*	CXP80316-101Q	IC		
IC10		*	CXK1013P	IC		
IC11			PST529F-MT	IC		
IC12		*	LC6543H-4154	IC		
IC13		*	SAA7579T	IC		
IC14			CXA1332M	IC		
IC15		*	AN7465S	IC		
IC16			M5201FP-71A	IC		
IC17			UPD4066BG	IC(BILATERAL SWITCH X4)		
IC18			LC7218M	IC		
IC19			KKC00	IC(SDK)		
IC31			TA8221H	IC		
IC32			NJM5532MD	IC		
Q1			2SA1428(O,Y)	TRANSISTOR		
Q2			DTC114EK	DIGITAL TRANSISTOR		
Q3			2SA1357	TRANSISTOR		
Q4			2SB1015LB	TRANSISTOR		
Q5			DTC114EK	DIGITAL TRANSISTOR		
Q6			DTA114EK	DIGITAL TRANSISTOR		
Q7			2SB1015LB	TRANSISTOR		
Q8			2SC2412K	TRANSISTOR		
Q9			2SB1188	TRANSISTOR		
Q10			DTC114EK	DIGITAL TRANSISTOR		
Q11 -15			DTC124EK	DIGITAL TRANSISTOR		
Q16			2SC2412K	TRANSISTOR		
Q17			DTA124EK	DIGITAL TRANSISTOR		
Q18			2SA1428(O,Y)	TRANSISTOR		
Q19			DTC114EK	DIGITAL TRANSISTOR		
Q20 ,21			2SC2412K	TRANSISTOR		
Q23 ,24			2SK433(D,E)	FET		
Q25 -30			2SD1757K	TRANSISTOR		

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Q33			2SC2412K	TRANSISTOR		
Q34			DTC124EK	DIGITAL TRANSISTOR		
Q35			DTA114EK	DIGITAL TRANSISTOR		
Q36 ,37			2SA1037K	TRANSISTOR		
Q38 ,39			DTC114EK	DIGITAL TRANSISTOR		
Q40 ,41			2SD1766	TRANSISTOR		
Q42			2SC2412K	TRANSISTOR		
Q43 ,44			2SA1428(O,Y)	TRANSISTOR		
Q45 ,46			DTC114EK	DIGITAL TRANSISTOR		
Q47 -51			DTC124EK	DIGITAL TRANSISTOR		
Q52			DTA124EK	DIGITAL TRANSISTOR		
Q53			DTB123YK	DIGITAL TRANSISTOR		
Q54			DTC114EK	DIGITAL TRANSISTOR		
Q61 ,62			2SD1757K	TRANSISTOR		
Q65			2SA1037K	TRANSISTOR		
Q66			2SC2412K	TRANSISTOR		
Q67 ,68			DTC124EK	DIGITAL TRANSISTOR		
Q69			2SC2412K	TRANSISTOR		
Q70			DTC124EK	DIGITAL TRANSISTOR		
Q71			DTA124EK	DIGITAL TRANSISTOR		
Q72			DTC114EK	DIGITAL TRANSISTOR		
Q73 ,74			2SC2412K	TRANSISTOR		
Q75			DTC124EK	DIGITAL TRANSISTOR		
Q76			DTA124EK	DIGITAL TRANSISTOR		
Q77			2SK669	FET		
Q78			DTA124EK	DIGITAL TRANSISTOR		
Q79			DTC124EK	DIGITAL TRANSISTOR		
Q80 ,81			2SA1428(O,Y)	TRANSISTOR		
Q91			DTC124EK	DIGITAL TRANSISTOR		
Q92			2SC2412K	TRANSISTOR		
Q93			2SB822F(Q,R)	TRANSISTOR		
Q94			2SA1037K	TRANSISTOR		
Q95			DTC124EK	DIGITAL TRANSISTOR		
270	2D	*	W02-1227-05	ELECTRIC CIRCUIT MODULE(DC/DC)		
TU1	2D	*	W02-1225-15	TUNER ASSY		
DAUGHTER UNIT (X89-1202-70)						
C1 -3			CK73FB1H223K	CHIP C 0.022UF K		
C4			CC73FSL1H271J	CHIP C 270PF J		
C5			CK73FB1H561K	CHIP C 560PF K		
C6			CK73FB1H223K	CHIP C 0.022UF K		
C7			CE04DW1A101M	ELECTRO 100UF 10WV		
C8			CE04DW1H2R2M	ELECTRO 2.2UF 50WV		
C9			CE04DW1HR22M	ELECTRO 0.22UF 50WV		
C10 ,11			CE04DW1H010M	ELECTRO 1.0UF 50WV		
C12			CC73FSL1H181J	CHIP C 180PF J		
C13			CK73EB1E104K	CHIP C 0.10UF K		
C14			CC73FSL1H470J	CHIP C 47PF J		
C15 ,16			CK73FB1H223K	CHIP C 0.022UF K		
C21			CE04NW1C101M	ELECTRO 100UF 16WV		
C22			CK73FB1H223K	CHIP C 0.022UF K		
C23			CC73FSL1H181J	CHIP C 180PF J		
C24			CK73FB1H332K	CHIP C 3300PF K		
C25			CC73FSL1H181J	CHIP C 180PF J		
C26			CK73FB1H332K	CHIP C 3300PF K		

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C27			CC73FSL1H181J	CHIP C 180PF J		
C28			CK73FB1H332K	CHIP C 3300PF K		
C29			CC73FSL1H181J	CHIP C 180PF J		
C30			CK73FB1H332K	CHIP C 3300PF K		
C31 ,32			CK73EB1E104K	CHIP C 0.10UF K		
C33			CE04NW1C101M	ELECTRO 100UF 16WV		
C34			CK73EB1E104K	CHIP C 0.10UF K		
C35			CK73FB1H223K	CHIP C 0.022UF K		
C48			CK73FB1H102K	CHIP C 1000PF K		
C61 -64			CK73FB1H471K	CHIP C 470PF K		
C65			CE04NW1C100M	ELECTRO 10UF 16WV		
C67 ,68			CE04NW1A220M	ELECTRO 22UF 10WV		
C69 ,70			CF92FV1H103J	MF 0.010UF J		
C71			CE04NW1A221M	ELECTRO 220UF 10WV		
C72			CE04NW1A220M	ELECTRO 22UF 10WV		
C73 ,74			CE04MW1E4R7M	ELECTRO 4.7UF 25WV		
C75			CK73FB1H223K	CHIP C 0.022UF K		
C76 ,77			CK73EB1E104K	CHIP C 0.10UF K		
C78			CK73FB1H103K	CHIP C 0.010UF K		
C79			CE04NW1C101M	ELECTRO 100UF 16WV		
		*	J39-0804-04	SPACER		
CF1 ,2		*	L72-0702-05	CERAMIC FILTER		
L3 -6		*	L39-1003-05	TRAP COIL		
L7			L40-4791-14	SMALL FIXED INDUCTOR(4.7UH,K)		
T1		*	L30-0701-05	FM IFT		
T2		*	L30-0702-05	FM IFT		
R1			RK73FB2A101J	CHIP R 100 J 1/10W		
R2			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R3			RK73FB2A561J	CHIP R 560 J 1/10W		
R4			RK73FB2A331J	CHIP R 330 J 1/10W		
R5			RK73FB2A820J	CHIP R 82 J 1/10W		
R6			RK73FB2A241J	CHIP R 240 J 1/10W		
R7			RK73FB2A393J	CHIP R 39K J 1/10W		
R9			RK73FB2A752J	CHIP R 7.5K J 1/10W		
R10			RK73FB2A272J	CHIP R 2.7K J 1/10W		
R11			RK73FB2A223J	CHIP R 22K J 1/10W		
R12			RK73FB2A563J	CHIP R 56K J 1/10W		
R13 ,14			RK73FB2A223J	CHIP R 22K J 1/10W		
R15			RK73FB2A103J	CHIP R 10K J 1/10W		
R16			RK73FB2A123J	CHIP R 12K J 1/10W		
R17			RK73FB2A221J	CHIP R 220 J 1/10W		
R18			RK73FB2A822J	CHIP R 8.2K J 1/10W		
R19 -21			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R22			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R23			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R24			RK73FB2A561J	CHIP R 560 J 1/10W		
R25			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R26			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R27			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R28			RK73FB2A333J	CHIP R 33K J 1/10W		
R29			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R30			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R31			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R32			RK73FB2A333J	CHIP R 33K J 1/10W		

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R33			RK73FB2A564J	CHIP R 560K J 1/10W		
R34			RK73FB2A153J	CHIP R 15K J 1/10W		
R35			RK73FB2A473J	CHIP R 47K J 1/10W		
R36			RK73FB2A564J	CHIP R 560K J 1/10W		
R37			RK73FB2A333J	CHIP R 33K J 1/10W		
R38			RK73FB2A473J	CHIP R 47K J 1/10W		
R39			RK73FB2A564J	CHIP R 560K J 1/10W		
R40			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R51			RK73FB2A101J	CHIP R 100 J 1/10W		
R52 ,53			RK73FB2A103J	CHIP R 10K J 1/10W		
R54 -57			RK73FB2A243J	CHIP R 24K J 1/10W		
R58			RK73FB2A101J	CHIP R 100 J 1/10W		
R59			RK73FB2A473J	CHIP R 47K J 1/10W		
R60			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R61 -64			RK73FB2A183J	CHIP R 18K J 1/10W		
R65 ,66			RK73FB2A181J	CHIP R 180 J 1/10W		
R67 ,68			RK73FB2A183J	CHIP R 18K J 1/10W		
R69 ,70			RK73FB2A334J	CHIP R 330K J 1/10W		
R71 ,72			RK73FB2A153J	CHIP R 15K J 1/10W		
R73 ,74			RK73FB2A223J	CHIP R 22K J 1/10W		
R75			RK73FB2A753J	CHIP R 75K J 1/10W		
R76			RK73FB2A223J	CHIP R 22K J 1/10W		
R77			RK73FB2A473J	CHIP R 47K J 1/10W		
R81			RK73FB2A221J	CHIP R 220 J 1/10W		
R82			RK73FB2A183J	CHIP R 18K J 1/10W		
R83 ,84			RK73FB2A123J	CHIP R 12K J 1/10W		
R85			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R86			RS14KB3D330J	FL-PROOF RS 33 J 2W		
R87			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R88			RK73FB2A100J	CHIP R 10 J 1/10W		
VR1 -5		*	R12-3188-05	TRIMMING POT.(22K)		
VR7 ,8		*	R12-3188-05	TRIMMING POT.(22K)		
D1			MA110	DIODE		
D6			MA110	DIODE		
D7			MA8056-M	ZENER DIODE		
D8			MA8091-M	ZENER DIODE		
D9			MA110	DIODE		
IC1		*	IF4S210	IC		
IC2 ,3			NJM2903M	IC(COMPARATOR X2)		
IC4			UPC4570G2	IC(OP AMP X2)		
IC5		*	TBA120U	IC		
IC6			TA7705F	IC(PREAMP FOR AUTO REVERSE)		
IC7			TA7291P	IC		
Q1			2SC2413K	TRANSISTOR		
Q2 ,3			DTC124EK	DIGITAL TRANSISTOR		
Q4			2SA1037K	TRANSISTOR		
Q5			DTC124EK	DIGITAL TRANSISTOR		
Q6 -8			2SC2412K	TRANSISTOR		
Q9			2SA1037K	TRANSISTOR		
Q11 ,12			DTC124EK	DIGITAL TRANSISTOR		
Q13			2SA1357	TRANSISTOR		
Q14			2SC2412K	TRANSISTOR		
Q15			DTC124EK	DIGITAL TRANSISTOR		

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			MECHANISM ASS'Y (X92-1390-02)			
7	2A		B09-0504-14	CAP (REEL CAP)		
8	3A		D01-0601-13	FLYWHEEL ASSY (FLYWHEEL)		
14	1A	*	D10-2505-13	ARM ASSY (ACTION PLATE ASSY)		
16	1B		D10-2507-23	ARM ASSY (LOUD ARM ASSY)		
21	1B		D10-2512-13	ARM (ACTION ARM)		
24	3A		D10-2515-14	ARM ASSY (FR ARM ASSY)		
26	3B		D10-2517-43	LEVER (FR REW PLATE)		
27	2B		D10-2518-33	LEVER (PROGRAM PLATE)		
28	1B		D10-2519-04	ARM ASSY (DOOR ARM ASSY)		
30	1B		D10-2521-04	LEVER (DOOR LEVER)		
31	2A		D13-1001-04	GEAR ASSY(REEL GEAR ASSY)		
34	3A		D13-1004-14	GEAR ASSY(FR GEAR ASSY)		
37	2B		D13-1007-24	GEAR (SUB MOTOR GEAR)		
38	1B		D13-1008-34	GEAR ASSY(LOUD GEAR ASSY)		
40	1B		D13-1010-14	GEAR (IDOL GEAR 1)		
41	1B		D13-1011-04	GEAR (IDOL GEAR 2)		
42	1B		D13-1012-04	GEAR (IDOL GEAR 3)		
43	1B		D13-1013-13	GEAR (MODE GEAR 1)		
44	3A		D13-1015-14	GEAR (TAKE UP GEAR)		
45	2B		D13-1016-23	GEAR (MODE GRAR 2)		
46	1B		D14-0601-13	PINCH ROLLER ASSY (F)		
48	1A		D14-0603-13	PINCH ROLLER ASSY (R)		
49	2B		D14-0604-04	ROLLER (PROGRAM PLATE ROLLER)		
50	3B		D14-0605-04	ROLLER (ROLLER 1)		
51	2A		D14-0606-04	ROLLER (ROLLER 2)		
53	2A		D15-0901-04	PULLEY (MAIN MOTOR PULLEY)		
54	3B		D15-0902-24	PULLEY (IDOL PULLEY)		
55	3A		D16-0601-04	BELT		
72	2A		D21-2018-04	SHAFT ASSY (CAPSTAN)		
80	2A		G01-2502-14	COMPRESSION SPRING (REEL CAP)		
82	1A		G01-2504-14	COMPRESSION SPRING (AZIMUTH)		
83	3A		G01-2505-14	EXTENSION SPRING (TAKE UP SP)		
84	1B		G01-2506-14	EXTENSION SPRING (LOUDING ARM)		
86	2A		G01-2508-24	TORSION COIL SPRING(METAL SENS		
87	1B		G01-2509-14	TORSION COIL SPRING		
88	2B		G01-2510-24	TORSION COIL SPRING(MODE PLATE		
89	1B		G01-2511-14	EXTENSION SPRING (DOOR ARM SP)		
90	1A		G02-1106-14	FLAT SPRING (PLAYBACK HEAD)		
91	1A		G09-2001-24	FORMED WIRE (PINCH ROLLER SP		
92	1B		G09-2002-14	FORMED WIRE (DOOR BAR)		
101	1A		J19-4302-32	HOLDER (PACK SLIDER)		
103	2B	*	J19-4304-13	BRACKET (SUB MOTOR PLATE		
105	1A		J19-4318-34	HOLDER ASSY		
110	1A		J90-0701-03	GUIDE (TAPE GUIDE)		
A	1A		N09-4009-05	SEMS (MACHINE SCREW)(M2X5)		
C	1A		N09-4005-05	MACHINE SCREW (M2)		
D	2B		N09-4006-05	MACHINE SCREW (M1.7)		
E	1A		N09-4022-05	MACHINE SCREW (2X6,+ﾅﾍﾞ ｻｲﾒ)		
F	2B		N09-4008-05	MACHINE SCREW (M2X2,ｾｲﾐﾂ		
G	3A		N39-2022-46	PAN HEAD MACHINE SCREW		
H	1B,2B		N35-2003-46	BINDING HEAD MACHINE SCREW		

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J	2B		N86-2004-46	BINDING HEAD TAPTITE SCREW		
K	2A,3B		N19-2003-04	FLAT WASHER		
L	1B,2A		N19-2004-04	FLAT WASHER		
M	3B		N19-2005-04	FLAT WASHER		
N	2A		N19-2006-04	FLAT WASHER		
P	2B		N19-2008-04	FLAT WASHER		
Q	2A,3A		N19-0373-04	FLAT WASHER		
R	1A		N19-2009-05	FLAT WASHER		
S	2A		N29-0208-04	RETAINING RING (3)		
T	1B		N29-0205-04	RETAINING RING (1.5)		
U	3A		N29-0501-05	RETAINING RING		
V	1A		N39-2030-46	PAN HEAD MACHINE SCREW		
W	1A		N19-1096-04	FLAT WASHER		
HD1	1A		T31-0202-05	PLAYBACK HEAD		
M1	2A		T42-0702-05	DC MOTOR (MAIN MOTOR)		
M2	2B		T42-0704-05	DC MOTOR (SUB MOTOR)		

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MARKING OF CHIP TRANSISTORS (SMT)

SMT (PNP)			
形 名／Parts No.	標 印／Mark	形 名／Parts No.	標 印／Mark
DTA144EK	16	DTA114YK	54
DTA124EK	15	DTA143TK	93
DTA114TK	94	DTA114EK	14
DTA144WK	76	DTA143EK	13
DTA143XK	33	DTA124XK	35
DTA124TK	95	DTA144TK	96
DTA123EK	12	DTA123JK	E32
DTA143ZK	E13	DTA113ZK	E11
DTA123YK	52	DTA114WK	74
DTA115EK	19	DTA115TK	99
DTA125TK	9A	DTA114GK	K14
DTA115GK	K19	DTA124GK	K15
DTA144GK	12		

SMT (NPN)			
形 名／Parts No.	標 印／Mark	形 名／Parts No.	標 印／Mark
DTC144EK	26	DTC114YK	64
DTC124EK	25	DTC143TK	03
DTC114TK	04	DTC114EK	24
DTC144WK	86	DTC143EK	23
DTC143XK	43	DTC124XK	45
DTC124TK	05	DTC144TK	06
DTC123EK	22	DTC123JK	E42
DTC143ZK	E23	DTC113ZK	E21
DTC123YK	62	DTC114WK	84
DTC115EK	29	DTC115TK	09
DTC125TK	0A	DTC114GK	K24
DTC115GK	K29	DTC124GK	K25
DTC144GK	K22		

SMT			
形 名／Parts No.	略記号 ／ Mark	形 名／Parts No.	略記号 ／ Mark
2SA1036K	H	2SA1037K	F
2SA1037KLN	D	2SA1455K	G
2SA1514K	M	2SB852K	U
2SC2059K	J	2SC2411K	C
2SC2412K	B	2SC2412KLN	L
2SC2413K	A	2SC3082K	S
2SC3722K	I	2SC3802K	AL
2SC3837K	AC	2SC3838K	AD
2SC3839K	AE	2SC3906K	T
2SD1383K	W	2SD1484K	Y
2SD1757K	AA	2SD1781K	AF
2SD1782K	AJ		

MPT			
形 名／Parts No.	略記号 ／ Mark	形 名／Parts No.	略記号 ／ Mark
2SB1132	BA	2SB1188	BC
2SB1189	BD	2SD1664	DA
2SD1766	DB	2SD1767	DC
2SD1834	DE		

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SPECIFICATIONS

FM TUNER SECTION

Frequency Range	87.5 MHz—108.0 MHz
Usable Sensitivity (DIN)	1.1 μV/75 ohms
Stereo Sensitivity (S/N=46 dB)	1.6 μV/75 ohms
Frequency Response (±4.5 dB)	30 Hz—15 kHz
Signal to Noise Ratio (IEC-A)	68 dB
Selectivity (DIN)	70 dB
Stereo Separation (1 kHz)	35 dB
19 kHz Carrier Leakage	65 dB

MW TUNER SECTION

Frequency Range	531 kHz—1611 kHz
Usable Sensitivity	30 μV

LW TUNER SECTION

Frequency Range	153 kHz—281 kHz
Usable Sensitivity	60 μV

CASSETTE DECK SECTION

Tape Speed		4.76 cm/sec.
Wow & Flutter (WRMS)		0.09% WRMS
Fast Winding Time		100 sec. (C-60)
Frequency Response (+4 dB, −6 dB)		30 Hz—18 kHz (120 μs) 30 Hz—20 kHz (70 μs)
Stereo Separation (1 kHz)		40 dB
Signal to Noise Ratio (IEC-A)	NR OFF	55 dB
	Dolby-B	65 dB
	Dolby-C	72 dB

AUDIO SECTION

Power Output		25 W ×2 Max power Output or 15 W ×4 20 W ×2 into 4 ohms, 1 kHz at 10% THD 15 W ×2 into 4 ohms, 1 kHz at 1% THD
Tone Action	Bass	100 Hz ±10 dB
	Treble	10 kHz ±10 dB
Preout Level/Impedance		1000 mV (max)/180 ohms

GENERAL

Operating Voltage	14.4 V (11—16 V allowable)
Current Consumption	6.0 A at Rated Power
Dimensions (W ×H ×D)	188 ×58 ×177 mm
Installation size	182 ×52 ×159 mm
Weight	2000 g

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